ANNALS of the
Association of American Geographers

Volume XXXIX DECEMBER, 1949 Number 4

RURAL SETTLEMENTS IN THE GERMAN LANDS*

ROBERT E. DICKINSON
Syracuse University

SINCE the publication of Meitzen's classic work in 1895, a vast amount of research has been undertaken on rural settlements in Germany. Especially notable in recent years have been the contributions of geographers trained in the technique of the medieval historian.[1] Numerous documented studies of small districts[2] and comparative studies of larger districts[3] have appeared and the stage has now been reached at which it is possible to generalize for the country as a whole in respect to the morphology of the rural habitat and the historical and physical factors involved in its development and regional variations. The final map in this article (Fig. 15) shows the distribution of a generalized classification of rural settlements, and reference should be made to it for the distributional aspects that are discussed in the paper.[4]

* Figs. 1, 4, 5, 6, 9, 12, and 14 are reproduced in part from Gustav Braun, *Deutschland* (Copyright 1936 by Gebrüder Borntraeger in Berlin); Fig. 2, from Carl Baasen, *Niedersächsische Siedlungskunde* (Oldenburg i O.; Ad. Littman, [1930]); Fig. 3, from Rudolf Martiny, *Hof und Dorf in Altwestfalen. Das westfälische Streusiedlungsproblem* (Stuttgart: Engelhorn, 1926); and Figs. 8, 10, 11, and 13, from W. Ebert, *Ländliche Siedelformen im Deutschen Osten* (Berlin: Mittler and Sohn, 1936). License to reproduce parts of these figures has been requested from, and agreed to, by the Office of Alien Property, U. S. Department of Justice.

[1] I am deeply indebted to Dr. Gotfried Pfeifer for carefully reading this manuscript, for a number of amendments, and for references to recent literature. I have inserted some of his comments as footnotes. Dr. Pfeifer is now Professor of Geography at the University of Heidelberg.

[2] e.g. H. Riepenhausen, "Die baüerliche Siedlung des Ravensberger Landes bis 1770," *Arbeiten der Geographischen Kommission, Provinzial-Institut für Westfälische Landes- und Volkskunde*, I (1938).

[3] e.g. H. Schlenger, "Formen Ländlicher Siedlung in Schlesien," *Veröffentlichungen der Schlesischen Gesellschaft für Erdkunde*, X (1930).

[4] Walter Christaller, "Die Ländliche Siedlungsweise im Deutschen Reich und ihre Beziehungen zur Gemeindeorganisation," *Einzelschriften des Kommunalwissenschaftlichen Instituts an der Universität Berlin* (1937).

There are two extreme types of grouping of rural settlement: the isolated farmstead placed in the midst of its own fields, and the nucleated village in which all of the farmsteads are clustered in the center of the village lands. Between these two extremes, there are numerous gradations that result from the social and economic history of the community.[5]

The form of the rural habitat is due to the interplay of historical and physical conditions. Significant historical conditions are such as the date and circumstances of the origin of the settlement, whether by individual squatters or groups of settlers under the supervision of high authority, and the laws and customs of inheritance, which varied in Germany from state to state. Significant physical conditions are such as the relief of the land, the fertility of the soil, and the suitability of these conditions to either pastoral or arable farming, the latter in general being favorable to the maintenance of the compact habitat, the former to the dispersed habitat. The form of the rural settlement is also inseparable from the type of field system or *Flur*, that is, the system of property distribution, with which it is associated.

The effective beginnings of the modern settlement patterns of western and central Europe date from the settlement of tribal groups at the beginning of the first millenium of the Christian era. The lands they occupied carried, at that time, little

R. Martiny, "Die Grundrissgestaltung der Deutschen Siedlungen," *Petermanns Mitteilungen*, Ergänzungsheft 197 (1928).

W. Ebert, *Ländliche Siedelformen im Deutschen Osten*, edited by R. Kötschke, 1936.

Special mention should be made of the extensive bibliography published by Hans Dörries (who died in 1945) on "Siedlungs- und Bevolkerungsgeographie (1908–38)," *Geographisches Jahrbuch*, LV (1940). This bibliography of 5,000 items is organized systematically and regionally. It is not restricted to Germany alone, but gives a substantial and easily usable list of references in this field over the whole earth.

See also A. Helbok, *Deutsche Siedlung: Wesen, Ausbreitung, Sinn*, Halle, 1938; A. Homberg, *Grundfragen der deutschen Siedlungsforschung*, Berlin, 1938; and B. Huppertz, *Räume und Schichten bäuerlicher Kulturformen in Deutschland*, Bonn, 1939.

It will be convenient to compare this summary with articles by C. B. Fawcett on "The Rural Habitat" in the *Geographical Journal*, XCIII (1939): 152–5; by A. Demangeon on types of rural settlement in France in the *Annales de Géographie*, XLVIII (1939); and with the book by R. Dion entitled *Essai sur la formation du paysage rurale en France*, 1934.

See also *The Cambridge Economic History of Europe from the Decline of the Roman Empire*, edited by J. H. Clapham and E. Power, Vol. I, "The Agrarian Life of the Middle Ages," Cambridge, 1941.

Detailed distributional maps of major areas have also been produced; e.g. Adalbert Klaar, *Siedlungsformenkarte der Reichsgaue Wien, Kärnten, Niederdonau, Oberdonau, Salzburg, Steiermark, und Tyrol und Vorarlberg*, Vienna, 1942. (Maps of village forms and field systems on a scale of 1:200,000.)

[5] For an excellent example of many detailed regional studies on these lines, see G. Pfeifer, *Das Siedlungsbild der Landschaft Angeln*, Inaugural Dissertation, Kiel, 1928. Reference should be made to more recent studies by W. Müller-Wille, "Das Rheinische Schiefergebirge und Seine Kulturgeographische Struktur und Stellung," *Deutsches Archiv für Landes- und Volksforschung*, VI, No. 4 (1943), and "Langstreifenflur und Drubbel. Ein Beitrag zur Siedlungsgeographie Westgermaniens," *Ibid.*, VIII, No. 1 (1944). The first named paper gives much more than a regional analysis. It is full of far-reaching suggestions.

or no woodland, and they had been occupied more or less continuously from Neolithic times. Recent researches in post-glacial changes and their effects on vegetation, with particular reference to the loess areas, are discussed in an article by Miss A. Garnett.[6] It is generally accepted among German scholars that there had already been some clearance of trees in prehistoric times. Man was attracted to the loess, by its fertility, and by the fact that it was well-drained and easily tillable with simple implements. The term forest-free, in contrast to forested, lands refers to conditions on the eve of the great era of forest clearance that commenced in western and central Europe in the middle of the first millenium A. D. (*Rodungszeit*). This is an alternative definition of the "natural landscape" that Miss Garnett does not include in her list of definitions of this vague term, but it is in this sense that it is normally used by German students of settlement. This first period of occupation is referred to by German scholars as the Early German Period and extended from the 5th to the 8th centuries. The forest-free areas at this time were not restricted to the loess soils, but were found on other well drained soils on limestones and gravels. Though pollen analysis has disproved the hypothesis of a dry Sub-Boreal phase as elaborated by R. Gradmann and others in which the *Steppenheide* flora entered (it was already there), and though forest clearance by felling and burning was carried on by prehistoric man, there is still no reason to doubt that these areas were often free of forest, or only lightly wooded, even at the time of the settlement of Neolithic man in the West German Lands.[7]

THE WEST GERMAN LANDS

In the historical development of the German peoples, there is a broad and basic

[6] A. Garnett, "The Loess Regions of Central Europe in Pre-historic Times," *Geographical Journal*, CVI (1945): 132–43. Also R. Gradmann, "Wald und Siedlung im Vorgeschichtlichen Mitteleuropa," *Petermanns Mitteilungen* (1940): 86–90.

[7] A rather complete selection (290 numbers) of titles on this subject is given in the critical summary of E. Fischer: "Stand und Aufgaben der Urlandschaftsforschung in Deutschland," *Zeitschrift für Erdkunde*, 1938: 737–758. It is a good introduction to this highly controversial subject and the bibliography is most useful. Pfeifer comments as follows: "Generally speaking one might say that the *Steppenheide-Theorie* in the earlier version of R. Gradmann can no longer be accepted and he himself has given some important and valuable modifications. Without taking into consideration the results of post-glacial geology, plant ecology, and climatology, that is, the purely natural side of the problem, the anthropogeographical side also has been restated especially relating to the possibilities of clearings and the role of the forest in a primitive economy. To put it somewhat bluntly, one has arrived almost at a reversal of the old view that forests are the enemies of primitive peoples. This it is held may be true for some tropical forest groups and some culture levels, but not for the situation prevailing in central Europe since neolithic times. Some suggest, as most strongly H. Nietsch ("Wald und Siedlung in Vorgeschichtlitchen Mitteleuropa," *Mannus Bücherei*, LXIV, 1939) that the presence of forests would be an absolute requirement for early settlement, in fact that prehistoric and early historic economy was an economy of forest peoples. But still Gradmann has the merit of having pointed for the first time to the full importance of the problem of areal continuity and the possibilities of tying up research in postglacial geology, plant geography, archeology, and the history of settlement." See Gradmann's critique of Nietsch's work, in *Petermanns Mitteilungen, op. cit.* (March, 1940).

geographic distinction between the lands in the west in which they first settled, and the lands in the east, of about equal extent, that were occupied by the Slavs, but were colonised extensively by the Germans during the Middle Ages. The divide between these two areas corresponds roughly with the Elbe and the Saale rivers and, less clearly, with their southward continuation in the Böhmer Wald and the Enns valley. Between the west and the east German lands so defined there are fundamental differences in the history of land settlement and, consequently, in the morphology of the rural habitat.

Place names indicate the early phases of German tribal settlement. Suffixes indicating the first phase of German settlement in the third and fourth centuries are *ingen* (in Luxembourg), *heim* (in Rheinhessen), *leben* (in the Magdeburg *Börde*), *stedt* (in Holstein). A second phase, from the fifth to the eighth centuries, involved the establishment of new villages near to the original ones and included very little forested clearing. Such places bear suffixes like *feld, hofen, dorf, hausen.* Some of the places have the suffix *weiler,* the origin of which is much disputed, but is certainly derived from the Latin villa, and some of these places certainly succeeded Roman settlements. German scholars regard these *weiler* places as entirely new Germanic (Frankish) settlements. The overwhelming majority lie west of the Rhine.[8] Settlements that originated during the *Rodungszeit* (c. 500–1350) have names that are indicative of their mode of origin and their relation to topographic features. Suffixes such as *rod, reud, ried, rath, rade, brand, hain, scheid,* and *grün* refer to forest clearings; *eck, stein, burg, fels,* to topographic features associated with defence; and *zell, kirchen, kappel,* and *kerke,* with ecclesiastical origins.

The first-settled land (*Stammland*) was mainly on the loess and limestone soils which stretch almost continuously in Germany from the Cologne Bay to Silesia, and cover large tracts of lowland and wide valley strips in south Germany—in the middle Rhine plain, the valleys of the Neckar and Main, and parts of the Bavarian Plateau. It also included smaller areas in the dry sandy heathlands of the northern lowlands. In all these areas the irregular clustered village is still characteristic, surrounded by its arable lands, meadows, common pastures, and woodland. (Fig. 1). The arable lands were divided into small, elongated strips, that were arranged in irregular furlongs or *Gewanne,* each *Gewann* being cultivated according to a time-table and usage prescribed by the village community.[9] This is the so-called *Gewanndorf* in which the village is named after the pattern of property distribution with which it is associated. The village itself consists of a cluster of farmsteads and other buildings, in which the streets are irregular in width and direction,

[8] For summary, See H. Schrepfer, *Landeskunde von Deutschland,* I, *Der Nordwesten,* 1935, p. 66.

[9] These furlongs or *Gewanne* might also function in the rotational procedure of the three field system (*Dreifelderwirtschaft*), but the open-fields of the latter may include several *Gewanne* and are as such properly called *Zelgen.* Hence the name *Zelgendorf,* which Müller-Wille and others are now using.

and the houses irregularly disposed with respect to the street frontage and to each other. For these reasons it is called, alternatively, the *Haufendorf*.

The *Haufendorf* is found with a *Gewannflur* throughout the early settled lands of western Germany, but there are important contrasts of settlement between the north and south. The researches of Steinbach, Homberg, and others have shown that the *Gewanndorf* was not generally the initial mode of rural grouping.[10] This problem is very complex, involving research on the shape and length of the single strips, the development and types of plows, and the social structure of the early rural community. Steinbach first introduced the idea that the *Haufendorf mit Gewannflur* in northwestern Germany developed gradually during the early Middle Ages from an initial dispersed habitat (*Einzelhof*), and that the system of communal cultivation of long narrow field strips around a central compact village developed in northern France from whence it spread to the German lands. Subsequent researches seem to confirm his theory. It would appear that well-defined medieval settlement types developed gradually from a more uniform primitive base, through different processes in northern and southern Germany, during the first phase of occupation of the land, for both historical and geographical (or as one may better say, ecological) reasons. The Alemanni,[11] for instance, invaded the "limes" in age-long sequences of fighting, while in northern Germany more gradual and less interrupted developments prevailed. The southern settlement was that of a fighting frontier and it may well be that the nuclei were more firmly concentrated and perhaps a little larger than in northern Germany. The peculiar local variations of soil and groundwater table in northern Germany also encouraged the scattering rather than concentration of farms, whereas in southern Germany wells and meadow land may have assisted the clustering of communities. But it should not be overlooked that there is some archeologic evidence already available that points towards a more dispersed occupation of the lands in some parts of southern Germany.[12]

From these nuclear areas that were occupied during the Early German Period down to about 800 A.D., settlement expanded during the ensuing period known

[10] For a newer statement see W. Müller-Wille, "Langstreifenflur und Drubbel," *Deutsches Archiv für Landes- und Volksforschung*, VIII, No. 1 (1944), 9–44.

[11] On Southern Germany, see Karl Weller, *Besiedlungsgeschichte Württembergs vom 3. bis 13. Jahrhundert nach Christus*, 111, Stuttgart, 1938: G. T. Wais, *Die Alemannen in ihrer Auseinandersetzung mit der römischen Welt*, 2e, Auflage, 1941: K. H. Shröder, *Die Flurformen in Württemberg und Hohenzollern*, Tübingen, 1941.

[12] Walter Veeck, "Über den Stand der alemannisch-fränkischen Forschung in Württemberg," *Deutsches Archäologisches Institut, Römisch-Germanische Kommission*, 15. Bericht, 1923/24, Frankfurt 1925/26; and Hermann Stoll, "Bevölkerungszahlen aus frühgeschichtlicher Zeit," *Die Welt als Geschichte*, VIII, I (1942). F. Lutge, *Die Agrarverfassung des frühen Mittelalters im mitteldeutschen Raum, vornehmlich in der Karolingerzeit*, Jena, 1937, and K. Wuhrer, *Beiträge zur ältesten Agrargeschichte des germanischen Nordens*, Jena, 1935, have also accepted the ideas of Steinbach. These have been summarized in "Geschichtliche Siedlungsformen in der Rheinprovinz," *Zeitschrift des Rheinischen Vereins für Denkmalspflege und Heimatschutz*, XXX (1937). A. Homberg is also an adherer to the *Einzelhoftheorie* as shown in his work *Die Entstehung der westdeutschen Flurformen: Blockgemengflur, Streifenflur, Gewannflur*, Berlin, 1935.

as the Age of Clearing or *Rodungszeit,* down to the 14th century. To this period are due most of the essential features of the countryside of the German lands today. There were, however, marked regional differences in the process of settlement in the Middle Ages and after, and so in the present character of the settlement forms. We may begin by considering the northern and southern sections of the west German lands.

Northern Germany

The so-called dispersed or isolated habitat is today characteristic of the northern lowlands west of the Weser, but it extends southwards beyond the lowlands to include the northern part of the uplands of the Rhine Massif (Fig. 15). Recent researches have made it clear that the dispersed habitat in Lower Saxony and Westphalia (and, it may be added, in the adjacent parts of the Netherlands)[13] is a secondary dispersion from an original open grouping of scattered farmsteads, which formed a single community engaged in the communal cultivation of small patches of arable land in the midst of uncultivated heath and marsh. This settlement is now considered to be the earliest type of German rural settlement in northwest Germany and in it are to be found the beginnings in this region of the *Gewannflur* and the *Haufendorf,* as well as of the *Einzelhof* or isolated farmstead. This initial settlement has been called by some German scholars an *Eschdorf.* It can be studied today in many settlements which have changed very little since early medieval times (Fig. 2). Its center is a portion of the common pasture (*Allmende*) called a *Brink* with oak and elm trees on it, in which, irregularly spaced at some distance from each other, are placed six to twelve farmsteads. Around this village nucleus lie the separate *Esche,* each in itself being a single *Gewannflur.* The *Esch*[14] is placed on slightly raised ground, usually an elongated oval in shape, with a sandy or loamy soil. It was divided into long narrow strips about 5 to 15 meters wide and 200 to 1,000 meters long, and these belonged to the farmers of the community (*Vollerben*) only. The *Esch* was sown with rye year after year, and its fertility maintained by heavy *plaggen* manure, a compost of scrub from the heath and cattle manure. Through centuries of manuring there has accumulated a soil layer with a color at the surface of dark grey changing in depth to brown, and with a total thickness of 20 to 70 centimeters. Each *Esch* was separately hedged as a protection against cattle and formed an island of cultivation in the common mark. The latter, the *Gemeente,* was heath, swamp, and peat bog, and served as common cattle pasture.[15] A cluster of farmsteads worked one or more *Esche.*

There are serious objections to the use of the term *Esch* to designate a settle-

[13] H. J. Keuning, "L'Habitat rural aux Pays-Bas," *La Néerlande, Études Générales sur la Géographie des Pays-bas* (Amsterdam: Congrés International de Géographie, 1938), pp. 93–119.

[14] G. Niemeier, "Eschprobleme in Nordwestdeutschland und in den Niederlanden," *Comptes Rendus du Congres International de Géographie* (Amsterdam, 1938), Tome Deuxième. Also Carl Baasen, *Niedersächsische Siedlungskunde* (Oldenburg, 1930) and R. Martiny, "Hof und Dorf in Altwestfalen," *Forschungen zu Deutschen Landes- und Volkskunde,* XXIV (1926).

[15] Christaller, *op. cit.,* p. 65.

ment form or a field system for, though widely used in northwestern Germany to designate a *Flur* under grain cultivation, this area may be one of the fields in a developed *Gewann* system, while the method of subdivision of the land in an *Esch* varies widely. Consequently, the terms *Langstreifenflur* and *Drubbel* are now in general use by German scholars to designate, first, the nuclear section of ploughed land that is divided into long, narrow, parallel strips, and, second, the open cluster of farmsteads associated with it. The word *Drubbel* is an old term in Westphalia for a hamlet.[16]

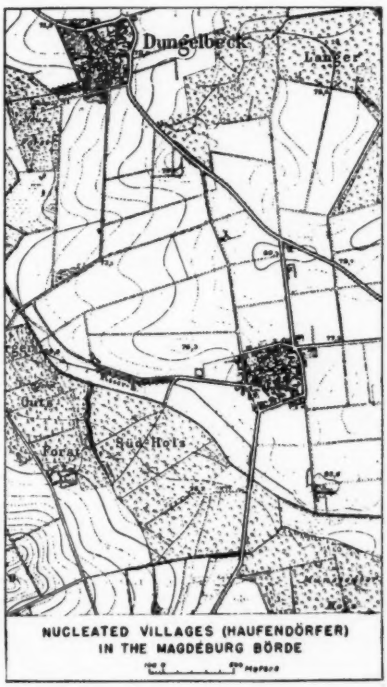


FIG. 1.

The *Drubbel* village, as described above, is to be found today almost unchanged in the dry, sandy heathlands of the northern lowlands, as in the Hümmling and the Lüneburg Heath. Elsewhere, it has been transformed to give either a compact village or a completely dispersed settlement. In richer arable lands, the addition of new farmsteads and the houses of craftsmen in the *Brink* led to the reduction of the woodland and the extension of the arable land in the surrounding *Mark*. In this way, the open group of farmsteads became a compact irregular village (called by

[16] W. Müller-Wille, *ibid.*

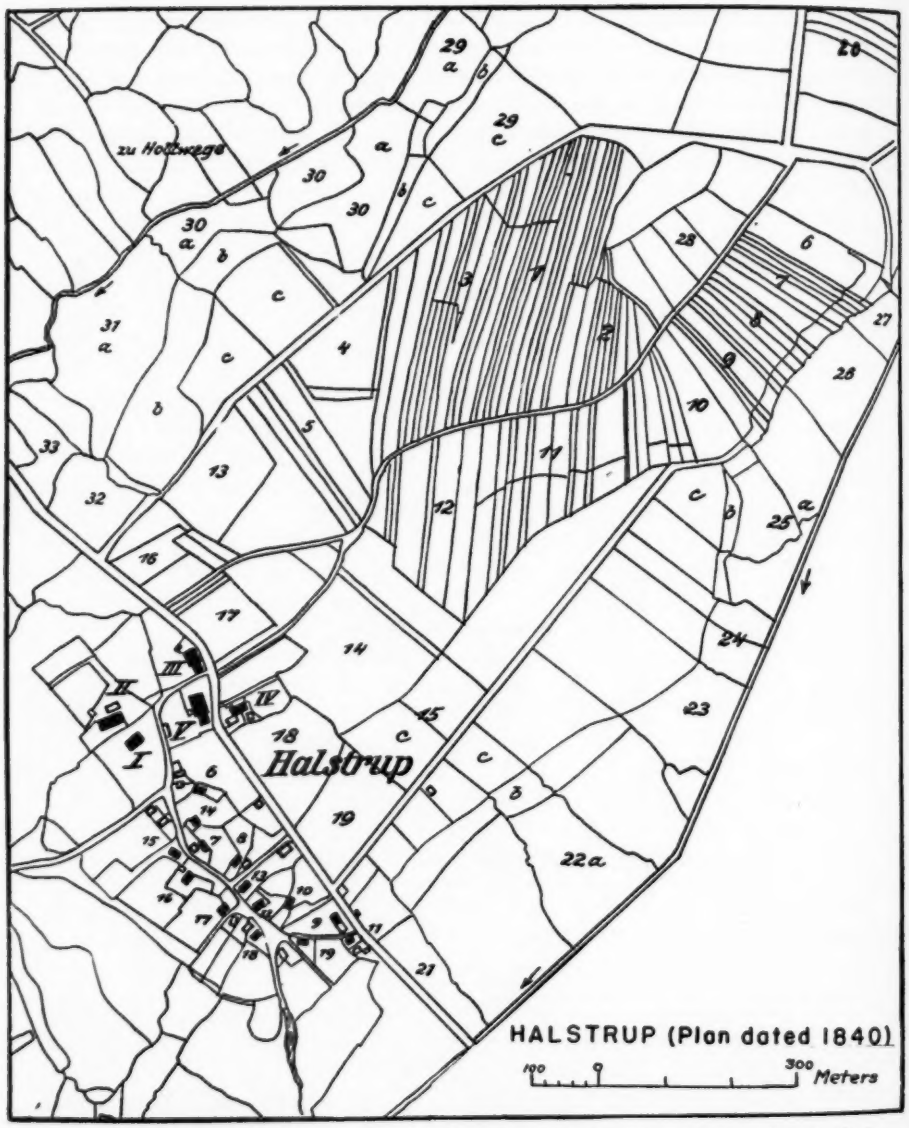


Fig. 2. A *Drubbel* village in the Oldenburg Ammerland. The cluster of farmsteads is adjacent to an *Esch* that stretches from northeast to southwest on slightly raised land. I through V are the farmsteads of the original land holders (*Altbauern, Vollerben*), 6 through 19 of the small holders (*Kötter*). The fields (Fluren) are numbered: 1 through 12 are *Gewanne* (groups of strips of the *Vollerben*) on the *Esch*, and the remainder are enclosed fields (Kämpe). Individually owned meadows (a), woodlots (b), and common land subdivided in the early 19th century (c), lie on the lower, ill-drained land to the north and south of the *Esch*.

Martiny a *Haufenwegedorf*), surrounded by hedgeless arable lands. Such villages are to be found pre-eminently in the *Börde* lands on the loess soils between Cologne and Magdeburg. (Fig. 1). On the other hand, in the northwestern lowlands, small farmers (*Kötter* or *Kötner*), who were excluded from property rights in the *Esch*, began at an early stage to leave the village group and reclaim new fields in the marsh and heath of the surrounding Mark, and here they built their farms. Such compact fields are called *Kämpe* and the settlement a *Kampsiedlung*. (Fig. 3).

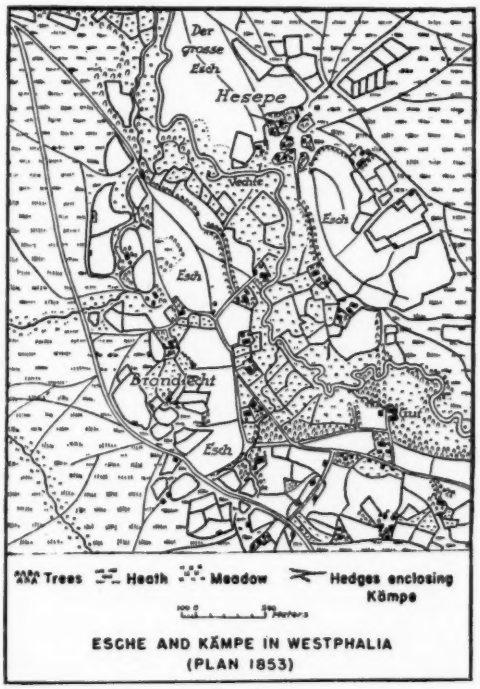


FIG. 3.

The process is akin to the squatter settlement that took place in the Middle Ages in England. But in northwest Germany (and northeast Holland) it commenced in the period from the 5th to the 8th centuries, and continued thoroughout the Middle Ages, and was resumed after the division of the common lands in the 19th century. Today, such *Kämpe* settlements with their separate fields or "blocks" (*Blockflur*) surround the *Drubbel* nucleus, which itself consists of a few farmsteads, e.g., the Münsterland (*Schwarmensiedlung*, Fig. 3). In some purely pastoral areas, as in the marshlands between the Ems, Jade, and Weser, the nucleus has disappeared and in its place there are small hamlets of scattered farmsteads grouped around an occasional church village (Fig. 4).

The importance of the study of field systems (*Flurformen*) in the understanding of rural settlement is clearly shown by a recent study of the villages of the *Börde* of Hanover.[17] Similar studies, as Pfeifer informs us, are being made in southern Germany to discover the original character of the old *Gewannflur*. The field system is not to be regarded as a "finished product" as it appeared in the earliest cadastral maps of the early 19th century, but as the result of a long process of growth that can be traced in the pattern of the cultivated strips. The field system in these *Börde* villages reveals a variety of patterns that differ as to location and age. Regular parallel strips (*Streifenflur*) and regular separate fields (*Blockflur*) occur on the outskirts of the farmed area. Here, too, occur small, irregular, separate fields that were apparently clearings on the edge of the forest. Both these kinds of field are the most recent additions to the farm area before the consolidation of

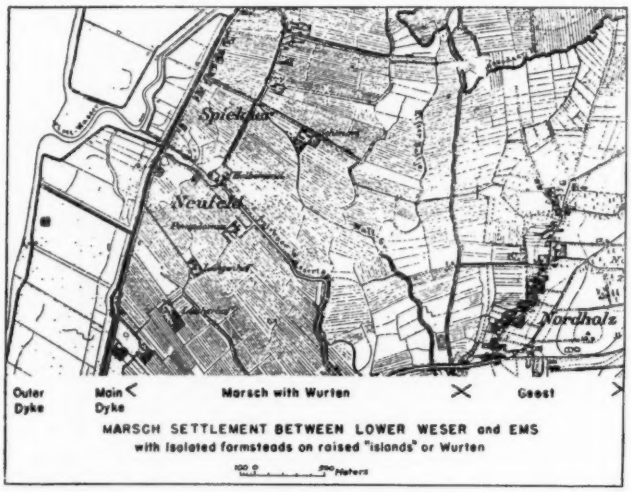


FIG. 4.

holdings took place (*Verkoppelung*) during the 19th century. The greater part of the farmed area consists of irregular, short, parallel strips that occur either as separate strips or groups of strips in conmmon fields (*Gewannflur*). These emerged through centuries by the extension of the farmed area around the nucleus of settlement. Though irregular by comparison, they are nevertheless systematically laid out and belonged to the *Kötner* and *Brinksitzer,* as well as to the *Voll-* and *Halbbauern*. The earliest fields, dating from the early Middle Ages, are the most irregular in shape. Long, narrow, parallel strips (*Langstreifenflur*) make up large areas and these belong to the *Voll-* and *Halbbauen*. The *Brinksitzer* and *Kötner*

[17] E. Obst and H. Spreitzer, "Wege und Ergebnisse der Flurforschung im Gebiet der Grossen Haufendörfer," *Petermanns Mitteilungen* (1939): 1–19, with maps.

holdings are almost unrepresented, and were therefore probably not in existence when the land was originally farmed and strips were laid out. The name *Feld is* associated with these oldest sectors and seems to be the equivalent of the *Esch*. These two are then the original farmland around which clustered the groups of farmsteads (*Lockeresdorf*), each a little apart from its neighbor. The original settlers were known as the *Voll-* and *Halbbauern*. Subsequent development led to the emergence of the isolated farmstead in the northwest and to the clustered village or *Haufendorf* in the loess lands of Lower Saxony.

A particular problem of rural settlement is that of the abandoned medieval village or *Wüstungsdorf*. The area discussed above has excellent examples of the desertion of such settlements in favor of adjacent villages that thereby increase in size. In this study it is shown that the *Fluren* of the larger *Haufendörfer* were composed of several *Fluren* which formerly were independent and belonged to smaller villages whose inhabitants later deserted them and moved into the present village.[18] This *Wüstungsforschung* has brought new flexibility into the formerly more rigid interpretation of settlement types and distributions.

Particular attention may be drawn to the Rhine Massif, in which isolated farmstead, hamlet, and village occur, with variations from district to district that are due as much to historical circumstances as to physical conditions. It was here that Steinbach and Homberg began their researches. In the Bergisches Land of the Wuppertal district and in the west of the Westerwald, dispersed settlement appeared in the Middle Ages as the initial settlement in forest clearings, but, through the law of divided inheritance and the development of handicrafts since the later Middle Ages, there gradually emerged small hamlets.[19] On arable soils on limestones and volcanic outcrops—as in the eastern half of the Eifel, the Sauerland, and the eastern half of the Westerwald—nucleated villages again occur, and, like the villages in the loess areas of Hesse and Thuringia, they date from the Early German Period and developed from an initial pattern of dispersed farmsteads.[20] Along the valleys there are large clustered vine-growing villages.

[18] The very complex process of the *Wüstungen* has been ably tackled lately by Scharlau and Abel. K. Scharlau, "Siedlung und Landschaft im Knüllgebiet: Ein Beitrag zu den kulturgeographischen Problemen Hessens," *Forschungen zur Deutschen Volks- und Landeskunde*, XXXVII (1941). The historical background has been studied by Wilh. Abel, "Die Wüstungen des ausgehenden Mittelalters: Ein Beitrag zur Siedlungs- und Agrargeschichte Deutschlands, *Quellen und Forschungen zur Agrargeschichte*, XVII (1943). Related to the problem is also: G. Franz, *Der Dreissigjährige Krieg und das deutsche Volk*, (2. Auflage; Jena, 1943), but being more occupied with the historical implications, needs geographical amplification and correction. See also H. Mortensen, "Zur deutschen Wüstungsforschung," *Göttingische Gelehrte Anzeigen*, (July/August, 1944).

[19] F. Steinbach, "Beiträge zur bergischen Agrargeschichte," *Rheinische Archiven*, 1 (1922). Also "Gewanndorf und Einzelhof" *Schulte-Festschrift* (1927). A. Homberg, "Siedlungschichte des oberen Sauerlandes," *Geschichtliche Arbeiten Westfälischer Landesforschung*, III (1938), 195 pp., 7 maps.

[20] W. Müller-Wille, "Das Rheinische Schiefergebirge und Seine Kulturgeographische Struktur und Stellung," *ibid.*

Southern Germany

In southern Germany, villages with the place name suffix *ingen* are especially characteristic of old Swabia and southern Baden, and *heim* occurs throughout Franconia. These are the names of the earliest villages which were established by Alemmanic and Frankish settlers, and they are to be found, as in northern Germany, in the forest-free arable lands. The history of medieval rural settlement, however, is markedly contrasted to that of northern Germany. Daughter settlements were established near these villages, with the same field system and communal economy as the parent villages, but the village names have suffixes such as *hausen, dorf, zimmern.* They also were established mainly in forest-free land during the Early German Period, before 800 A.D. After this date the clearance and settlement of the forest began, starting in the vicinity of the existing villages and ending with the settlement of the wide tracts of forest under the guidance of high authority. The earliest of these hamlets have suffixes such as *bach, feld, berg, bronn;* whereas others show affinities to the church, e.g. *pfaff, frauen.* Other names show the relation of the settlement sites to the consideration of defense by the feudal lords in the later Middle Ages, e.g., *burg, fels, eck.* Names indicative of clearings in forest are *reut, riet, brand, scheid.* The whole of this period of settlement extends from 800 to 1300 A.D.

While the *Rodungszeit* in the northern lowlands resulted in the clearance of marsh and forest around existing villages by the local movement of individual pioneers, in southern Germany it usually took the form of systematic forest clearance and the settlement of whole communities under the initiative and supervision of high authority.[21]

The great forests between the areas of first tribal settlement became imperial property and the land was granted to individual landlords. In the forest settlements, the three field system as practised in the older vilages was abandoned. Each farm had several compact fields which were intermixed with others on a block system and could be cultivated at the farmer's discretion, but for reasons of tradition and to facilitate defense and communal organisation, the farms were usually grouped in loose clusters to form small hamlets. Occasionally in areas with sufficiently extensive patches of arable land, hamlets subsequently grew to be compact villages. It was far more usual for the hamlet to remain intact, as in the Black Forest, or, especially where the land was broken into scattered patches of cultivable land, or

[21] There are, of course, some exceptions to this general contrast between northern and southern Germany. Individual movements of settlers are known in southern Germany, and guided or directed group movement is not unknown in northern Germany. The importance of the territorial or, rather, political structure in medieval times for the development of the settlement forms has been very ably demonstrated by H. Abel "Die Besiedlung von Geest und Marsch am rechtenweserufer bei Bremen," *Deutsche Geographische Blätter,* XLI (1933), reviewed by Spreitzer *Petermanns Mitteilungen* (1934) : 273. In southern Germany it is exemplified in the *Vereinödungsprozess:* H. Dorn, *Die Vereinödung in Oberschwaben,* 1904; and W. Heimhardt, "Volksdichte und Siedlungsverhältnisse des Württembergischen Oberschwabens," *Forschungen zur deutschen Landes- und Volkskunde* (1908). See the more recent work of Stepp, *Kulturgeographische Wandlungen auf der Iller-Lech Platte,* (Dissertation, Berlin 1937).

again where a pastoral economy was dominant, the hamlet gradually disintegrated, eventually to be replaced by a completely dispersed habitat. This last change has been carefully studied in the morainic lands of the Allgau where it was facilitated from the 16th to the 18th centuries by the law of the large landowners. The process is known as *Vereinödung* (Fig. 5).

The isolated farmstead and the hamlet are today characteristic of the eastern half of Bavaria (Upper and Lower Bavaria and the Upper Palatinate), the morainic lands of the Bavarian Plateau, the Fichtelgebirge, Frankenwald, Franconian Jura, the Keuper marl lowlands of the middle Neckar basin, the Black Forest, Vosges, Odenwald, and Spessart. All these areas are still mainly forested, but have scattered patches of cultivation on the flat land of broad valley floors, river terraces, or

FIG. 5.

plateau surfaces. In the Black Forest and the Vosges, the farmsteads are arranged in groups of isolated farmsteads, and one village community (*Gemeinde*) comprises several such clusters strung along a road or a valley bottom and separated from each other by strips of farmland. These individual hamlets are called *Zinken*.

Thus, for the northern and southern sections of the west German lands in general, it may be stated that the isolated farmstead of today is to be associated with the presence of numerous small patches of cultivable land, with the predominance of a pastoral economy which demands fixity of tenure of hedged meadows, and, in certain States, with the law of undivided inheritance which also prevented the further sub-division of single holdings. On the other hand, in the richer cultivated areas, the initial villages have grown in size and compactness through the addition of farmers,

craftsmen, and traders, particularly where the law of divided inheritance has prevailed. This concentration is most marked in the vine-growing villages of the Rhine and Neckar Iands.

THE EAST GERMAN LANDS

German colonization east of the Elbe and Saale started under Charles the Great in the south and during the 10th century in the middle and north; then it suffered setbacks, but regained momentum in the 12th century. Effective German settlement beyond this line began towards 1200 A.D. and the German agrarian civilization was then imposed upon the more primitive culture of the Slavs.[22]

The Slavs depended mainly on cattle raising, fishing and hunting, with a little primitive agriculture. They practised at first a shifting cultivation and their settlements were of a temporary character. The permanent settlement consisted of a

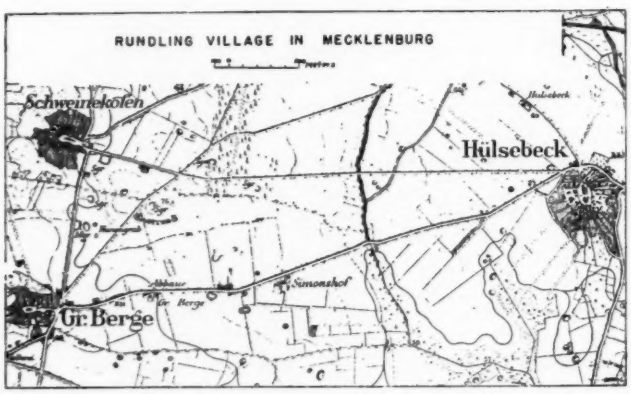


FIG. 6.

group of farmsteads, closely adjusted to the terrain, but usually clustered around an irregular open place upon which faced the farmsteads and from which there were only two or three exits (Fig. 6). This place was in fact an enclosure and probably served both as a defense for the folk and a refuge for their stock from man and beast. The field system was distinct from that of the German *Gewanndorf* (Fig. 7). The arable land was divided into irregularly-shaped parcels or blocks, several belonging to one peasant. The system seems to have developed by the slow accretion of cultivated parcels, and is completely contrasted to the long narrow strips of the German *Gewanndorf*. These villages were very small and the chief areas of settlement were

[22] R. Kötzschke and W. Ebert, *Geschichte der Ostdeutschen Kolonisation*, (1937). H. Aubin, "Zur Erforschung der deutschen Ostgrenze," *Deutsches Archiv für Landes- und Volksforschung*, I (1937). See also A. Klaar, "Die Siedlungsformen des oberösterreichischen Mühlviertels und des böhmischen Grenzgebietes," *Deutsches Archiv für Landes- und Volksforschung*, X (1937): 131. For the general bibliography, 1908–38, see Dörries, *op. cit.*, pp. 317–22.

on the loess lands and the drier diluvial platforms between the great glacial troughs, the marsh and forest of the latter being avoided. They were sited on river banks since the Slavs apparently did not practice the art of sinking wells to get their water. The original area of Slav settlement spread west beyond the Elbe and the Saale and, indeed, until the early Middle Ages, Slav settlement was dominant in the eastern half of south Germany, so that these small clustered hamlets are still to be found sporadically in these areas, as well as throughout the areas of German colonization.

The German colonization introduced new settlement forms into the Slav lands. Sometimes, the Slav village and its field system were left untouched (apart from the acceptance of German law) or the settlement of a few German peasants resulted

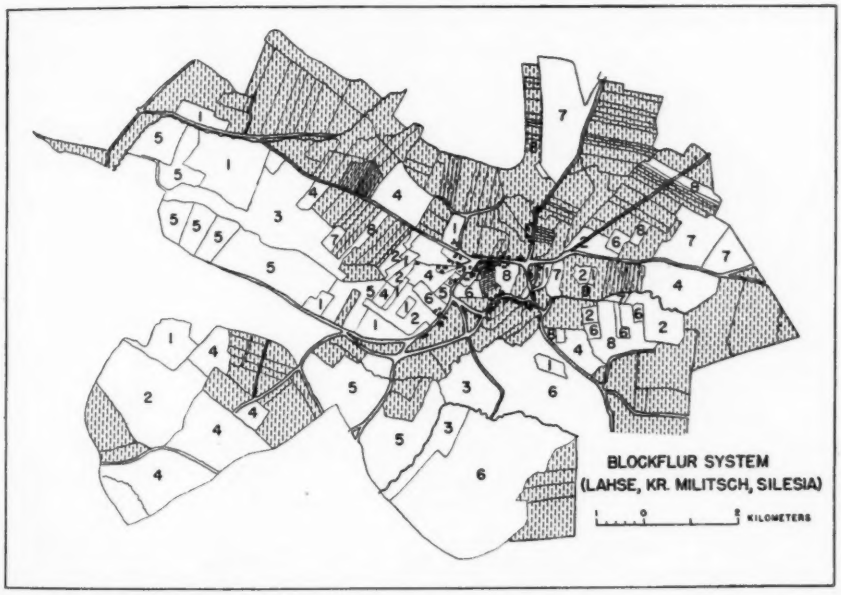


FIG. 7. The *Blockflur* system in the east German lands, redrawn from Ebert. Numbers show the parcels of one owner. The shaded areas are heath and scrub, most of which has been cleared to form separate hedged fields.

in the addition of a few narrow strips to the irregular fields of the village. Frequently, the Slav field pattern was regularized and extended, and there emerged a combination of the Slav block system and the German strip systems. In many cases, when new German villages were laid out, the older Slav village in the vicinity was destroyed or gradually abandoned.

Throughout these newly settled lands there are to be found two principal German settlement forms with which are associated distinct field systems. First, the three-field strip system was introduced into old Slav and new German villages. While

this system grew gradually in the west in each individual village, the new villages in the east were laid out systematically, and the furlongs (*Gewanne*) and their strips demarcated on a definite plan with a preconceived, regular layout, as opposed to the piecemeal pattern of the western villages (Fig. 8). This holds good, too,

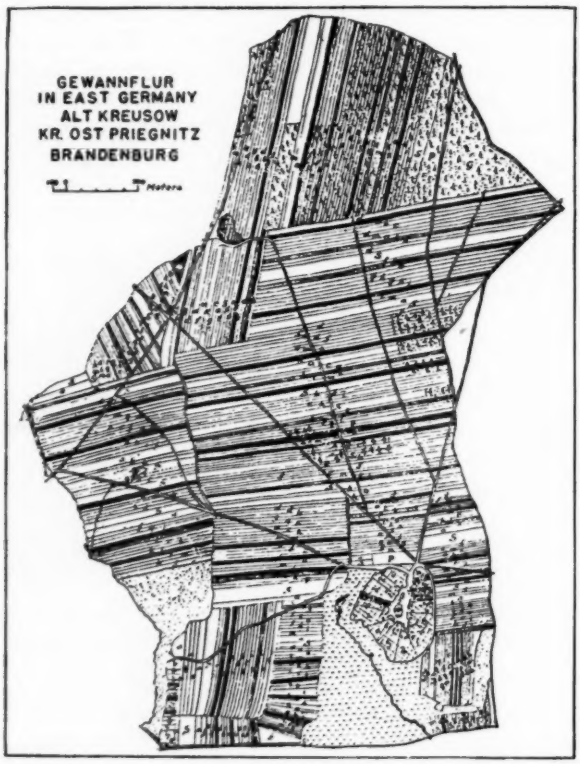


FIG. 8.

for the grouping of the farmsteads. The plan of the whole village was designed by a *Lokator,* who followed certain widely adopted principles of layout. The most common planned forms were the *Strassendorf* (Fig. 9) and the *Angerdorf* (Fig. 10). In the former, two series of farmsteads face each other in two rows on a road which existed *before* the settlement. In the latter, the two rows of farms face a wide, long space running the whole length of the village in which are a common pond, the church, and often the cottages of landless laborers and the outhouses of the farmsteads.

Among the diminutive villages of Slav origin much attention has been given to

the *Rundling* (Fig. 6).[23] This was a common form with many minor variants among the Slavs, though it was neither peculiar to them (since the same layout, in the interests of defense, is found throughout western Europe among early medieval settlements) nor was it common to all the Slavs. The form seems to have been regularized and copied as a unit planned settlement by the Germans (*Rundplatzdörfer*). As such it is frequent in Brandenburg and Styria.[24] This planned form is clearly distinct from the simple Slav *Rundling,* differing from it in size, regularity, layout, social structure, and field system. It is probably for this reason that these village types are so common in the Slav-German border zone.

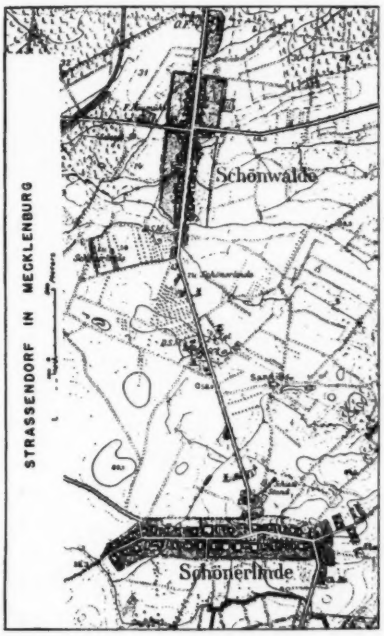


FIG. 9.

Throughout the east German lands there are today remnants of the earlier Slav villages (as indicated by place names). These have under two hundred inhabitants;

[23] A. Krenzlin, "Die Kulturlandschaft des Hannoverschen Wendlands," *Forschungen zur deutschen Landes und Volkskunde,* XXVIII (1931)—the classical landscape for Rundlings. Miss Krenzlin also has given a good summary: "Probleme der neueren nordostdeutschen und ostmitteldeutschen Flurformenforschung," *Deutsches Archiv für Landes- und Volksforschung,* IV, No. 3/4 (1940), with bibliography. Interesting, but perhaps a bit sweeping, is the paper of H. Wilhelmy "Völkische und koloniale Siedlungsformen der Slawen; Ein Beitrag zum Einzelhof, Haufendorf- und Rundlingproblem," *Geographische Zeitschrift* (1936): 81. He considers that Rundlings were common to both Germans and Slavs.

[24] Ebert and Kötschke, *op. cit.* p. 178.

they are irregular in form, are centered on a place or a cul-de-sac, and are surrounded by scattered, irregular, parcels of cultivated land. In Mecklenburg and Pomerania the Slav settlements remain intact with place name suffixes such as *itz, ow, thin,* though planned German forms are scattered among them. Especially common in these two provinces are large landed estates (*Gutshöfe*) of medieval

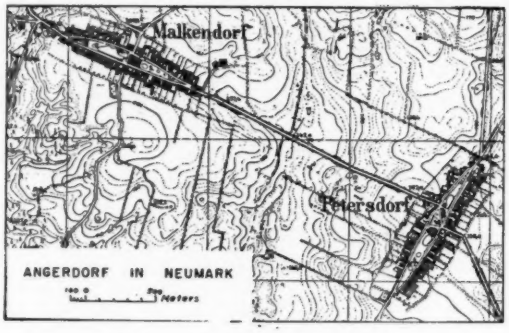


FIG. 10.

origin which often form a separate settlement, or the *Gutshof* is surrounded by a group of laborers' cottages to form part of a larger village. The *Gutshöfe* were founded by German landowners at the invitation of the Slav rulers. (Fig. 11)

The second type of medieval field system and village settlement is found especially in reclaimed marshland and forest clearings, though it is not peculiar to such areas. In the "forest village" (*Waldhufendorf*), the farms are arranged

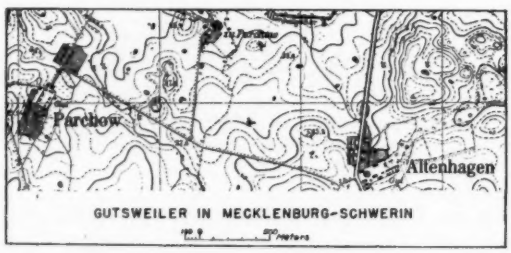


FIG. 11.

in a series, like beads on a chain, along a broad valley bottom or a route. The farm holding (*Hufe*) consists of one belt of land running back from the farm to the limits of the village area and including meadow, arable land, and woodland (Fig. 12). The "marsh village" (*Marschhufendorf*) has a similar arrangement of both farms and holdings, except that it occurs in land which has been reclaimed by dyking and the farms line the dyke or canal (Fig. 13). A main feature of both these settle-

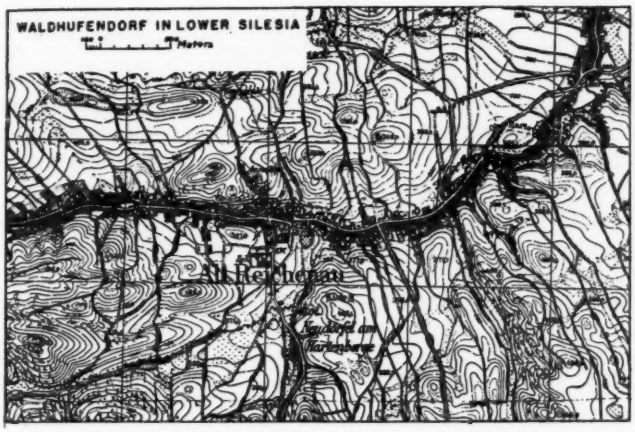


FIG. 12.

ments is the systematic layout of the farms with consolidated holdings, as opposed to that of the strip system which is associated with the three field system of communal cultivation. The marsh village is first heard of in the early 12th century in the lower Weser, where it was established by Flemish settlers. It would seem that the forest village was developed from the layout of the marsh village. The forest village occurs in incipient forms in the Odenwald and Spessart and Black Forest, but it is especially characteristic of the forested uplands east of the Saale in the Vogtland, Erzgebirge, Sudetes, and the western border of the Erzgebirge, and in East Prussia. The same principle was used in the layout of villages in the northeastern lowlands in combination with the three field system.

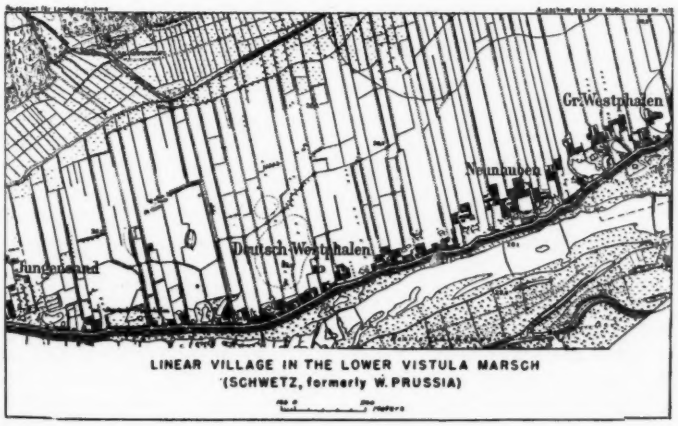


FIG. 13.

POST-MEDIEVAL CHANGES

New areas to be brought under cultivation in the 16th to the 18th centuries differed in the eastern and the western lands. In the eastern lands villages were founded, notably by Frederick the Great, on the floors of the great glacial valleys. They had the same general plan as the marsh villages, but were much more rigidly laid out. Large estates (*Güte*) were built up by the Junkers in this period east of the Elbe in association with the development of large scale grain and dairy production and the development of a crop rotation that included fodder grasses (*Koppelwirtschaft*). In the middle Danube lands German villages were laid out on a rec-

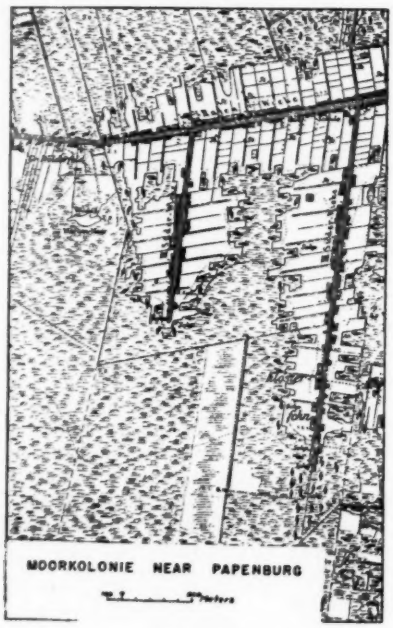


FIG. 14.

tangular plan. The village had a central, rectangular market place; the fields were divided at right angles by earthen tracks; and the farmers had several scattered parcels, each directly accessible from the tracks. In the western lands the consolidation of holdings took place in the areas particularly suited to cattle farming as in the Allgäu; and *Kampen* farmsteads continued to appear in the northern lowlands. Especially important was the establishment of new settlements (*Fehnkolonien*) in the moors and peat bogs of the northern lowlands (Fig. 14).

At the end of the 18th century there came great changes in rural life and organisation which, however, were in general tardy in their legal enaction and still slower in

their effect on the countryside. The consolidation of holdings (*Verkoppelung*) has not gone far,[25] and there has been no radical change in the strip system of the open fields. The number of parcels was often reduced by the amalgamation of adjacent strips, but the strip system inside the arable land and the general grouping of the arable and, meadow, woodland and scrub invariably are the same today as they were hundreds of years ago. The grouping of parcels (*Zusammenlegung*) as ordained by the State has generally met with the strongest opposition from the peasantry. This was the case in the district of Trier in the Rhine Massif. Here, beginning in 1885, the State consolidated holdings in the arable lands so that, as examples, one holding had its parcels reduced from 296 to 24, another from 216 to 21, and a third from 92 to 13. Such changes were introduced in over 600 *gemeinde* and resulted in pronounced improvements in farming techniques.[26] Common lands in the northwestern lowland were divided and isolated farmsteads became even more widespread, but this did not take place in southern Germany. The consolidation of holdings and the growth of large estates, caused much land to be enclosed in the pastoral areas of the Baltic, where field hedges are known as *Knicks*.[27]

The contrasts in the rural landscape between the west and east German lands are accentuated by the social and economic developments of the 19th century. Free agriculture with enclosed fields was frequent in western Germany, but the communal village system was still dominant, although the peasants were free of many feudal dues. In eastern Germany the growth of the large estate under the control of the large landowner, or *Junker,* was enchanced by the emancipation of the peasantry in 1807 since this justified the Junkers' eviction of the landless peasant, for all the peasants who did not possess oxen and a share in the village fields were evicted. In the west the peasant had more protection of his legal rights, and here too the French *Code Napoléon* had been introduced. The enclosure movement, that completely transformed the countryside of England and produced similar effects in Sweden and Denmark, had little effect on Germany except, as noted, on the Baltic shores. The rearrangement of fields was not permitted by law in the German states until the middle of the 19th century and after, and even then little advantage was taken of this decree.

THE CLASSIFICATION OF RURAL SETTLEMENT FORMS

In conclusion, attention may be drawn to two recent general classifications of rural settlements in Germany based on this historical approach.

A classification submitted by Christaller is as follows.[28] It has been simplified for reproduction on Fig. 15.

[25] See Clapham, *The Economic Development of France and Germany 1815–1914.*

[26] See Aubin and Niessen, *Geschichtlicher Handatlas der Rheinprovinz* (1926).

[27] A fine comparative treatment of the *Knicklandschaften* has been given by O. Jessen: "Heckenlandschaften in NW—Europa," *Mitteilungen der Geographischen Gesellschaft Hamburg,* XLV (1937).

[28] Walther Christaller, *op. cit.*

1. *The Irregular Clustered Village* (*Haufen-* or *Gewanndorf*)
   (a) in the old *Volksland* (the initial areas of German tribal settlement) of Lower Saxony (*Niedersachsen*); the north of each of Westphalia, Hesse, and Thuringia; and Schleswig-Holstein: and
   (b) in the areas of early medieval settlement in south Germany and the Rhineland.

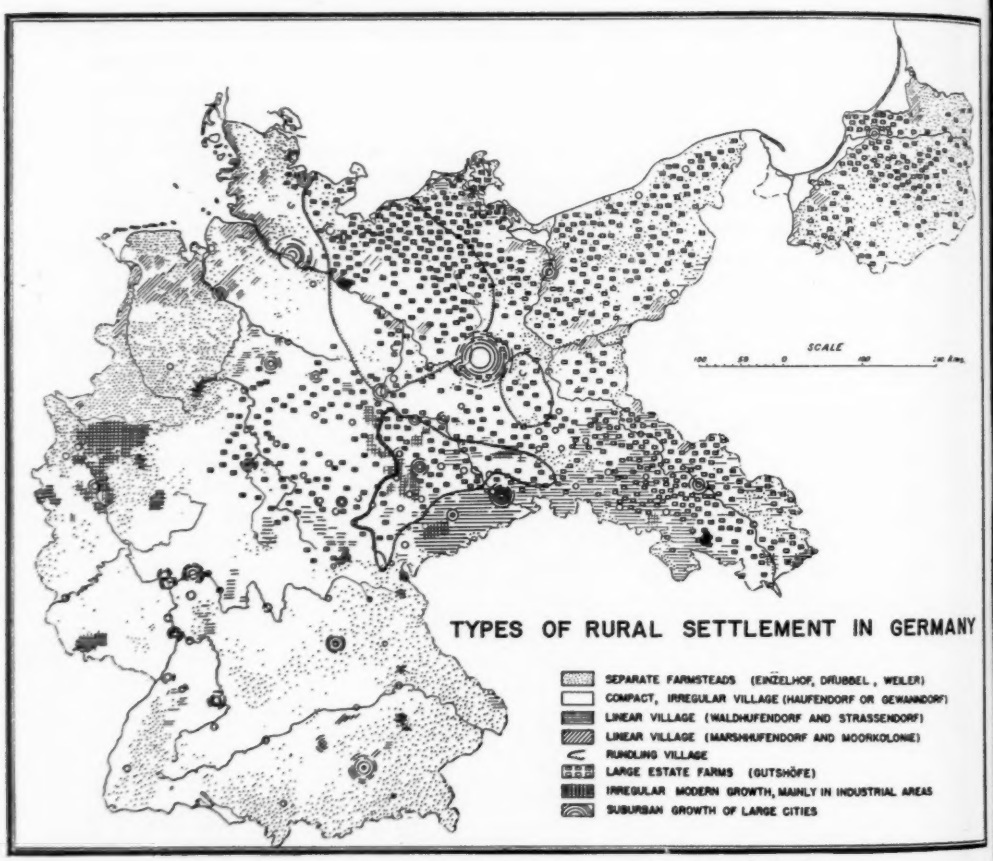

SCALE
TYPES OF RURAL SETTLEMENT IN GERMANY
SEPARATE FARMSTEADS (EINZELHOF, DRUBBEL, WEILER)
COMPACT, IRREGULAR VILLAGE (HAUFENDORF OR GEWANNDORF)
LINEAR VILLAGE (WALDHUFENDORF AND STRASSENDORF)
LINEAR VILLAGE (MARSHHUFENDORF AND MOORKOLONIE)
RUNDLING VILLAGE
LARGE ESTATE FARMS (GUTSHÖFE)
IRREGULAR MODERN GROWTH, MAINLY IN INDUSTRIAL AREAS
SUBURBAN GROWTH OF LARGE CITIES

FIG. 15. Types of rural settlement in Germany, adapted from Christaller.

2. *Isolated Farmsteads* (*Einzelhöfe*)
   (a) irregularly scattered, e.g., Münsterland;
   (b) in groups around a village nucleus (*Schwarmensiedlung*), e.g., Osnabrück district; and
   (c) in linear arrangement, along routeways (*Kettendörfer*).

3. *Hamlets* (*Weiler*)
   (a) founded by landlords in forest clearings in south Germany;
   (b) grouped around large estate farms (*Gutshöfe*), as in Mecklenburg; and
   (c) emerging through the continual subdivision of holdings (*Erbteilung*) in areas with dispersed farmsteads.
4. *Place villages* (*Platzdörfer*) or *Rundlings,* the primitive Slav settlements of the early medieval period.
5. *Angerdörfer,* the chief village type in the east German (colonized) lands.
6. *Street Villages* (*Strassendörfer*), the name being used only for those villages which were founded on an existing route; these are widespread in the Slav lands.
7. *Linear Villages* (*Reihendörfer*) are similar to the villages of groups 2 (c) and 6, but are fundamentally different in origin. They include:
   (a) marsh villages (*Marschhufendörfer*);
   (b) forest villages (*Waldhufendörfer*);
   (c) *Fehnkolonien;* and
   (d) estate settlements (*Gutskolonien*).
8. *Estate Villages* (*Gutshöfe*), both isolated and in combination with villages, e.g. Mecklenburg.
9. *Urban Villages,* especially mining and industrial settlements.
10. *Suburban Settlements.*
11. *Modern Industrial Settlements.*

W. Ebert, an economic historian, has grouped the medieval rural settlement forms, with special reference to those of eastern Germany, as follows:[29]

Group I. Estate Settlements (*Gutssiedlungen*), that is, large estate farms, hamlets, and small villages, which are mainly clusters of laborers' cottages.

Group II. Small Forms, that is, all diminutive forms each with a central open place (*Gassen, Sackgassen, Weiler, Rundweiler, Rundling*). With these there occur estate settlements and dispersed settlements formed by the consolidation of holdings (*Vereinödung*).

Group III. Fully developed closely built-up forms (*Grossformen*) These include street villages and all kinds of place villages (*Platzdörfer*). In some areas these types are mixed with dispersed farms, as in East Prussia, where the latter have been formed by the consolidation of holdings.

Group IV. Linear Villages.[30] These fall into four types as follows:
(a) one- and two-sided linear villages;
(b) one- and two-sided linear villages after the style of the north German marsh villages, sometimes intermixed with dispersed settlements;

[29] W. Ebert, *op. cit.*

[30] This English term is far better than the term *Strassendorf,* that is often used indiscriminately by American geographers for any kind of "shoe-string" settlement along a highway.

(c) one- and two-sided forest villages, often intermixed with dispersed settlements; and

(d) chain villages (*Kettendörfer*), often intermixed with dispersed settlements.

Group V. Dispersed Settlement (*Streusiedlungen*).

Group VI. Colonial Settlements planned after the style of the preceding village types.

Though the same kind of field system occurs in association with different village forms as listed above by Ebert, compact block systems are associated with the estate (*Gut*) settlements; the block system and the *Gewann* system are associated with Group II; the *Gewann* system with Group III; *Hufen* holdings with Group IV; and single fields with *Einödfluren* appear in Groups V and VI.

These and many other schemes of classification of field systems and villages indicate the need for a certain standardisation of nomenclature and cartographic representation. To this end a committee, under the chairmanship of Professor R. Kötschke, was established during the war by the *Amt für Landeskunde*, and its conclusions have been published.[31] A standard color scheme is suggested for field systems, among which the following main categories are recognised—*Blockflur, Langstreifenflur, Gewannflur,* and *Gereihte Flur.* Allowance is made in the color scheme for many intermediate and mixed categories, as, for example, the combination of *Langstreifenflur* and *Kampflur* that is common in northwestern Germany. The arrangement of separate fields in association with dispersed farmsteads is also indicated (*Einödflur*) as well as the *Gutshof.* Recent schematic forms of field arrangement (most of which have appeared since about 1700) are shown separately. The same scheme suggests a classification of village settlement forms into the main categories of *Haufendorf; Weiler* or hamlet (which includes the old hamlet or *Drubbel* and the *Ausbauweiler* or *Rodungsweiler,* that emerged from parent villages through forest clearance during the middle ages); the *Einzelhof* or dispersed farmstead; the *Strassen-* or *Angerdorf;* the *Gassendorf;* the *Zeilendorf;* the *Wegedorf;* the *Reihendorf;* the *Platzdorf;* and the *Gutshof.* Coming from a group of varied specialists, under the chairmanship of a leading historian, this is the most authoritative attempt to classify field systems and settlements and should find general acceptance for purposes of general mapping, although it is not intended in any way to interfere with, or stereotype, intensive local studies.

The rural settlements of today began with very obscure origins and are the product of a long process of development and change associated with changing social, economic, political, and legal conditions. They differ also in accordance with physical conditions. And it is clear that their origins and development vary from one area to another. This genetic or historical approach affords a basis for the interpretation and classification of rural settlements today according to their

[31] A. Krenzlin, "Die Kartierung von Siedlungsformen im Deutschen Volksgebiet," *Berichte zur Deutschen Landeskunde,* III, No. 3/4 (1943): 259–66, two legends for field systems and village forms.

size and grouping. Such classifications are not empirical, but are based on the selection of significant groupings viewed in the light of their origin and development. There are many such classifications, and these differ considerably one from the other.[32] What one seeks is not an overall classification, which is quite impossible, but an appreciation, based on thorough painstaking studies of small areas, of the historical processes that have resulted in the groupings to be found today. The study of settlements is approached on the basis of structure, process, and stage, recognizing that the processes, and in consequence the settlement forms, vary from one area to another.

APPENDIX

The following list refers to sheets of the standard German map series on the 1:25,000 and 1:100,000 scales that illustrate different kinds of settlement.

1:25,000

Examples of dispersed settlement:

Streusidelung and *Einzelhof* (dispersed habitat), Bl. Buldern;
Weilersiedlung (hamlets), Bl. Meinerzhagen;
Gutsiedlung (estate farm), Bl. Thelkow.

Examples of nucleated settlement:

Haufendorf, Bl. Hohenhameln;
Rundling, Bl. Luchow;
Strassendorf, Bl. Messdorf;
Angerdorf, Bl. Gross Rade;
Reihendorf, Bl. Ziegenhals;
Waldhufendorf, Bl. Papenburg;
Friderizianische, Bl. Dechsel.

1:100,000

Streusiedlung: 308, Bielefeld; 330, Münster-im-Westfalen; 378, Crefeld; 379, Elberfeld.

Haufendörfer: 311, Hildesheim; 356, Soest (also dispersed); 438, Erfurt.

Strassendörfer: 213, Perleberg; 248, Friedeberg; 271, Custrin; 367, Finsterwalde; 450, Ohlau.

Rundlinge: 187, Parchim; 213, Perleberg.

Waldhufendörfer: 371, Sprottau; 420, Görlitz; 442, Dippoldiswalde; 448, Waldenburg; 469, Annaberg.

Weiler: 534, Kemnath; 550, Sulzbach; 581, Cham.

Marschhufendörfer: 145, Stade; 175, Brake; 203, Bunde.

Wurten: 172, Emden.

Moorkolonie: 176, Bremer-vorde; 204, Leer; 255, Laar.

Kolonistendörfer: 75, Friedland; 104, Rossel.

[32] W. Brünger, "Gedanken über das Wesen, die Methoden und die Begriffsbildung der Flur- und Siedlungsgeographie," *Erdkunde,* II (1948): 126–146.

THE AMERICAN AGRICULTURAL FAIR: THE PATTERN

FRED KNIFFEN

Louisiana State University

AN EXTENSIVE literature touches nearly every aspect of fairs.[1] However, there are some serious gaps in recorded knowledge concerning them and many significant data are so scattered through a variety of publications as to be virtually unavailable.

As cultural phenomena fairs have received scholarly attention, for example, in the several articles dealing with them in the Encyclopaedia of the Social Sciences,[2] or in Cornelius Walford's "Fairs Past and Present"[3] and P. Huvelin's "Essai Historique sur le Droit des Marchés et des Foires."[4] More pertinent, geographers have considered fairs a proper subject for study; one of them, André Allix, wrote "The Geography of Fairs: Illustrated by Old-World Examples."[5] Among American geographers, G. M. Wrigley[6] studied fairs of the central Andes, establishing several principles regarding location and time of market fairs in that area. McBryde[7] and others treat Indian market fairs of highland Central America.

The distinctly geographical aspects of fairs are pattern or form, place, and time. Wrigley[8] points out that Peruvian fairs generally take place at a change of seasons, and that they tend to be situated at some equating point for the movement of peoples, such as in the Titicaca Basin, between Peruvian valleys and Argentine pampas. An additional factor in the location of Andean fairs is the requirement of abundant pasture to feed assembled livestock. Allix,[9] dealing with the fairs of Europe, is concerned, among other matters, with what are clearly geographic qualities: the economic spheres of the great commodity fairs; distribution in time and space; the form of the fair, with consideration of temporary and permanent installations; location with respect to towns and cities; and correlation of individual fairs with the natural conditions. In 1914 Allix[10] proposed the term "umland" to

[1] See bibliography in Wayne C. Neely, *The Agricultural Fair,* (New York, 1935).

[2] Under *Fairs, Festivals, International Expositions, Agricultural Fairs, Agricultural Societies,* etc.

[3] London, 1883.

[4] Paris, 1897.

[5] *Geographical Review,* XII (Oct. 1922), 532–569.

[6] "Fairs of the Central Andes," *Geographical Review,* VII (Feb. 1919), 65–80.

[7] Webster McBryde, "Sololá," *Middle American Research Series,* No. 3 of Publ. No. 5, Tulane Univ., (1933).

[8] *Op. cit.,* pp. 74, 77–79.

[9] *Op. cit.,* pp. 536–538, 543–544, 549.

[10] *Ibid.,* p. 553.

apply to the area of economic domain of specific fairs. He concluded that the "host town" with its umland is one of the fundamental elements in the definition of each fair.[11]

While every important individual aspect of the American agricultural fair has its European predecessor or counterpart, in its entirety it is genuinely a New World institution. Here the course of historical development has emphasized educational function at the expense of market function. The ancient elements of entertainment, the spirit of the festival, and respite after harvest are all there, but the primary purpose of the American fair is to improve agriculture and the domestic arts by offering attractive premiums for exhibits.

The present study limits its scope to state, district, and county agricultural fairs. These three differ mainly in degree, and are alike in all important respects. The small neighborhood fair and specialty fairs are excluded. The neighborhood fair often lacks some of the essential characteristics of the larger fairs, while specialty fairs additionally are concerned with but one phase of agriculture, such as individual crops or single breeds of livestock.

The proper procedure in the geographical study of fairs is deemed to be chronological or historical, specifically, to delineate the developing pattern of the American agricultural fair and to examine it in the light of its time and space relations. The study should include treatment of the origin, diffusion, and sectional reception of the fair; the short-lived blossoming of the individual fair and its off-season appearance; the localization of the fair with respect to permanent settlements; and the migration of the fair season southward to parallel, crudely, autumn's retreat. The umland concept of Allix has little significance for the non-commercial American fair.

The present paper covers roughly half the proposed study, or that portion dealing with the origin and development of the pattern or form complex of the American agricultural fair. A projected paper completes the study with consideration of the fair's time and space relations.

ANTECEDENTS OF THE AMERICAN AGRICULTURAL FAIR

Market fairs similar to those of Europe were widely held in colonial America. Like their European counterparts, the American fairs served a variety of functions in addition to providing a locale for the purchase, sale, and exchange of goods. Bills were paid, credits established, and other business transacted. Horse racing, troupes of travelling showmen, acrobats, vendors of the commonplace and the unusual, gamblers, thieves, and fortune tellers all contributed to make the fairs considerably more than mere market places.

Market fairs in America never enjoyed their European popularity, so that by the time of the Revolutionary War they had largely disappeared from the scene. Attempts to revive them during the early years of the nineteenth century met with little success. Why the market fair should have been unfavorably received in

[11] *Ibid.*, p. 568.

America while the educational agricultural fair was a great popular success, is not entirely clear. William Dean Howells[12] poses the question, then answers it by suggesting that it is part of the American's character to produce fine goods, but that he is no huckster. However much truth there may be in this easy rationalization, it is not the complete explanation.

The American agricultural fair is one of the more recent institutions to bear an old, very general name. It is the direct outgrowth of efforts to improve agriculture and, like the antecedent English fair of similar nature, it was fostered by agricultural societies, themselves a phenomenon of the Agricultural Revolution of the eighteenth century. The Agricultural Revolution was a commercialization of agriculture to meet increased demand for food created by the Industrial Revolution and its accompanying urbanization.

Following the English pattern, agricultural improvement in America was first advocated and encouraged by gentlemen farmers; Washington and Jefferson are among the names of prominent agricultural leaders of their period. A growing spirit of nationalism was expressed in attempts to make the new country self-sufficient, notably in the case of wool production.

Pioneer agricultural societies were active in Philadelphia and Charleston as early as 1785; they were quite common by 1800. However, the early agricultural societies were conducted on a plane of high learning to such an extent that they had little appeal for the common working farmer and were largely ineffective in improving the course of cultivation or stock breeding.

The fair was the means used by the agricultural societies to educate the practicing farmer to the advantages and ways of improving livestock and crops. When premiums were awarded the individual for superior accomplishment as demonstrated in competitive displays, the essence of the American agricultural fair emerged. The honor of holding the first true agricultural fair is generally conceded to Elkanah Watson's Berkshire Society that in 1811 at its second annual meeting offered prizes in a competitive display of livestock held in Pittsfield, Massachusetts. Premiums for the best livestock exhibited were awarded at fairs held in the District of Columbia in 1804–05; claims to even earlier priority are made for South Carolina.

Granting the chronological precedence of other fairs, Watson's Berkshire exhibit is still the prototype of American agricultural fairs as they subsequently developed. The Berkshire fair was probably the first that stressed educational functions to the practical exclusion of all others. Further, it was the New England-New York background that conditioned the pattern of the fair, not only in areas settled by emigrants from that region, but also in others normally deriving their institutions from a different source. Finally, the Berkshire fair as conceived by Watson had the appeal that assured its popular success. Therefore, if the evolution and diffusion of the American agricultural fair are to be examined, the study must begin with the Berkshire Society's first "cattle show" of 1810.

[12] "Editor's Easy Chair," *Harper's*, CVI, (December 1902), 163–167.

THE DEVELOPING PATTERN OF THE AGRICULTURAL FAIR

The pattern or form complex of the fair is the outward, material expression of its multiple functions. The pattern has changed as functions have been added or have experienced revision in emphasis. Further, there is annually a temporary change in pattern. For the great majority of fairs, tents and other ephemeral structures outnumber permanent installations, so that quite different fixed patterns distinguish fair week from other times of year, not to mention the temporary presence of crowds of people, automobiles, livestock, and other mobile phenomena.

The agricultural fairs of today and most of those within the memory of the oldest living persons conform to a generally common pattern. Even casual reflection reveals that the fair performs two main functions, education and entertainment, and that the form complex of the pattern corresponds to the demands of these functions. A breakdown of this gross analysis shows that the educational function is expressed by buildings for displays of agricultural products and the domestic arts; livestock judging and parades; the booths, lectures, and exhibits of educational and propaganda organizations; and demonstrations of machinery and equipment by manufacturers. The function of entertainment is represented mainly by race track and midway. Educational exhibts, race track, and midway are inseparably joined in the pattern of the modern fair, yet each of the three developed quite independently of the other; their symbiotic association in the American agricultural fair did not come until the institution was over a half-century old.

Horse racing and travelling carnivals were mentioned as features of colonial market fairs, but each of the two had an independent existence. Certainly both were well developed and thriving when Elkanah Watson instituted the Berkshire fair in 1810. The latter, however, was almost purely educational in purpose and practice. The Berkshire Agricultural Society was part of a New England that frowned upon horse racing and the frivolity of carnival amusements. The Society even went so far beyond its avowed purpose as to lend support to the temperance movement.

The Pattern: 1810–1830[13]

What is accepted as the first fair, therefore, was functionally devoted to education, and its material imprint on the New England landscape matched the purpose. The Society and its fair or cattle show as they developed during the early years of their being set the pattern for the first big growth of similar institutions, which came during the period 1810–1830; they also provided the prototype for the educational features of fairs to the present day.

Watson's Berkshire Society and others copied from it were successful because they were composed of working farmers and were not simply debating societies for gentlemen amateurs. The fair programs established within the first few years show

[13] For this period see Elkanah Watson, *History of Agricultural Societies on the Modern Berkshire System*, (Albany, 1820); and *Men and Times of the Revolution; or, Memoirs of Elkanah Watson*, (New York, 1856).

how thoroughly down-to-earth the procedures were. There were exhibits of livestock, field and orchard crops, and articles of domestic manufacture. Prizes and certificates for excellence of displayed items were awarded in a public meeting. At first prizes were granted exclusively for livestock, but only because there were insufficient funds to cover other exhibits.[14] Parades, with mounted marshals, bands, floats showing the operation of loom and spinning jenny and articles of American manufacture, marching mechanics, oxen pulling a plow held by an old man, and a company of Society members wearing wheat cockades, were an important feature of the early fairs. Indicating the high moral tone of the occasion were benedictions pronounced by leading clergymen, pastoral odes sung by a choir, and an annual address delivered by a prominent speaker. Perhaps a bit on the lighter side were a plowing match and a grand agricultural ball.

The early fairs lacked special buildings or permanent installations of any kind. The church was used for prayers, odes, annual address, and the public awarding of prizes. A nearby hall housed the displays of crops and domestic arts. An adjacent grove was the site of temporary pens impounding the animals on exhibit. Even without permanent special buildings, the pattern consisting of church, hall, animal pens, parade, and crowds of people was a distinctive one (Fig. 1).

The Pattern: 1830–1850

With New England and New York as a nucleus, Berkshire Plan societies spread widely during the period 1810–1825. Between 1825 and 1840 agricultural fairs reached a low ebb as to both number and interest. The reasons for the decline can be found readily: agriculture was generally not prosperous and public financial aid was largely withdrawn from the societies' activities. A revival of agricultural prosperity began about 1840; a renewal of state financial aid to fairs followed.

The period 1830–1850 is important because during these years there was a transition in the pattern of the fair from the simple delineation of Watson's day to something suggesting the complexity of a later era. Most of the important features of Watson's original Berkshire fairs were retained. But there were significant additions, some of them quite foreign to Watson's ideas.

Exhibits of agricultural products, livestock, and home arts and crafts continued to form the nucleus of the fair. Plowing contests persisted into the 1840's at the New York state fairs and much later elsewhere. The annual address remained a regular feature. Fairs had little in the way of permanent installations, especially the state fairs, since they were shunted from town to town in order to favor no single political subdivision. For example, the New York state fair was held at Syracuse in 1841; the courthouse and adjoining grove were used for displays.[15]

A widely adopted change came when the grounds were enclosed with a high

[14] The term "cattle show," used for the early fairs and occasionally to the present time, did not mean emphasis on cattle to the exclusion of cultivation and home industries; *show*, however, stresses correctly the non-commercial character of the institution, as opposed to *market*.

[15] R. W. Morrish, *A History of Fairs*, (Oklahoma City, 1929), p. 34.

board fence in order to permit charging admission. Exactly when and where this practice originated is not known, but it was in effect at the New York state fair held in Rochester in 1843.[16] Ten acres were surrounded by the fence. Within the enclosure were temporary sheds and pens for housing the exhibits, and in it presumably were held the plowing contests and annual address.

Eventually of greater importance was the growing emphasis on entertainment. Even Watson had made some slight concessions in the form of plowing matches and agricultural balls, but it was a far cry to the integration of horse racing and carnival with the educational elements of the fair. The union was organic only when the feeling expressed by the ancient adage, "all's fair at fair time," reached general acceptance. No such possibility was even suspected during the period 1830–1850, but since the first moves were made at this time, they may properly be outlined here.

Horse racing made overtures toward joining agricultural fairs ahead of carnivals. In part because of historical accident it was the racing of light-harness horses rather than running horses that eventually became so typically a feature of fairs. Standard bred, light-harness horses are strictly of American origin. The great nursery of the breed was New England and the lower Hudson Valley, the same general area that nurtured the agricultural fair. Races of trotting horses under saddle or to cart were held in colonial times. For the period immediately under examination (1830–1850) there is record of well-established race courses on Long Island and specific mention of trotting races.[17]

Harness horses edged into fairs quite naturally as a breed of livestock important in rural living and economy. Obviously they were significant in an age when transportation depended so strongly upon the horse. Horses were first shown in the same manner as cows or other livestock, with emphasis on qualities such as size, conformation, and color. There is record of premiums awarded in the 1840's to light-harness horses, with various classes designated for age and sex.[18] Clearly, speed in a driving horse was important. "Brushes" between two rivals along country roads were common even in a New England that condemned formal races. It was almost inevitable that speed trials should become an accepted practice whereby fair judges might measure the excellence of a road horse. The procedure was readily rationalized as necessary to "improve the breed." Speed trials appear to have become common at fairs by the late 1840's. However, horses were commonly trotted individually over a measured course against time rather than matched with others of their class in direct competition.

What may be termed professional racing of trotting horses was well under way and exceedingly popular by the end of the 1840's. However, no fair dared sponsor or advertise races as such. To do so would have antagonized and kept away large

[16] *Ibid.*, p. 35.

[17] John Hervey, *The American Trotter*, (New York, 1947), p. 23.

[18] *Ibid.*, pp. 66–68.

numbers of potential patrons. In one probably unique case a fair moved to an established race track, when in 1841 the St. Louis Agricultural Society held its fair on the grounds of a race course.[19] It is not known that this arrangement of convenience had any effect upon the general taboo against racing at fairs.

Somewhat later chronologically, but still within the period under discussion, travelling shows and associated amusements began to appear to share in fair crowds. Like formal racing, the shows at this time were parasitic upon the fairs rather than an integral part of them and literally remained outside the gates.

The pattern of the period is an enlargement of and about the simple delineation of the original Berkshire fairs. Inside the high board fence are the temporary sheds and pens housing the agricultural exhibits—largely the fair of Watson's time. Still outside are racing and carnival attractions (Fig. 2). The union of educational and amusement functions had to await a more favorable era.

The Pattern: 1850–1870

The period 1850–1870 has been designated by Kenyon L. Butterfield, eminent student of farmers' social organizations, "the golden age of the fair."[20] It is true that during these decades there was wide expansion of fairs accompanying a new prosperity of agriculture. As Wiest[21] points out, however, 1850–1870 has been too absolutely characterized as the golden age, since after 1870 fairs have grown phenomenally. In another sense perhaps Butterfield is right, in that during this era fairs remained largely true to the principles developed by Elkanah Watson and at the same time were expanded on an elaborate scale.

Functionally, then, the period was marked by the survival in a dominant position of agricultural exhibits and the various practices developed around them. Products of the home arts and crafts and new farm machinery continued to accompany the displays of livestock and crops. There were formal annual addresses, lectures, essays, evening discussion sessions, and at least occasionally, prayers. On the lighter side, but still reminiscent of the prototype, were the popular plowing matches.

By 1850 fairs were being established as far west as Iowa and Minnesota. Though the agricultural exhibits and livestock displays were poor imitations of eastern models, the first western fairs were almost purely educational in function. However, they supplemented the eastern plowing match with a women's riding contest, rationalized as contributing to greater safety for ladies riding horses in city traffic! Such contests proved immensely popular, drawing many spectators through the period of their practice—well into the 1870's.

Throughout the two decades there was a continuous struggle between educa-

[19] David R. Francis, "Southern Agricultural Fairs and Expositions," *The South in the Building of the Nation,* V (1909), 591.

[20] Kenyon L. Butterfield, "Farmers' Social Organizations," *Cyclopedia of American Agriculture,* IV (New York, 1909), 289–297.

[21] Edward Wiest, "Agricultural Fairs," *Encyclopaedia of the Social Sciences,* I (New York, 1930), 544.

tional and entertainment functions. The former found especially in horse racing a real threat to its dominant position in the composition of the fair. There was tremendous interest in all horses and particularly in fast road horses, as demonstrated by the Minneapolis fair of 1855, in which there was a showing of Morgans, noted as road horses, but no exhibit of draft animals.[22] Legitimate speed trials easily grew into races, and without even changing the name. From the early 1850's speed trials were commonplace at New York fairs, and the same was true for distant Kentucky prior to the Civil War.[23]

There is note of competitive racing at the New York state fair at Elmira in the middle fifties, though most certainly it was called "speed trials."[24] Michigan fair officials warned in 1856 that speed trials must not detract from other features.[25] Several years before the Civil War complaints were registered against time trials by those "whose horses couldn't win."[26] During the war professional racing largely ceased and with its decline running or thoroughbred racing went into temporary eclipse. Northern fairs, with few or brief setbacks, continued to operate and harness racing or speed trials advanced to new popularity.

Entertainment other than racing appeared in new forms before the end of the period in 1870. The contest between two fire engines at the Fort Snelling, Minnesota, state fair of 1860 may be considered a forerunner of the elaborate spectacles of the twentieth century.[27] A new prominence of brass bands was the natural outgrowth of a military period. The introduction of balloon ascensions established an attraction popular until the appearance of the airplane in the twentieth century. But even though horse racing was slowly winning a place in the composition of fairs, the other half of the modern entertainment features, the midway, was yet to find acceptance. As late as 1862, vendors and showmen at Ohio fairs remained outside the grounds.[28]

The pattern of the fair resulting from its evolving functions took on some new elements during the period 1850–1870. High board fences remained standard equipment to enable the charging of admission; they enclosed larger plots of ground. A half-mile track became a distinguishing feature; it is mentioned for Minneapolis in 1859,[29] and for Utica, New York, in 1863.[30] Substantial buildings were rare at the beginning of the period; they were not numerous at its conclusion. State fairs, which were still without permanent sites, made use of public buildings, occupied

[22] Morrish, p. 43.

[23] Francis, p. 588.

[24] Hervey, p. 119.

[25] Neely, p. 192.

[26] *Ibid.*, p. 195.

[27] Morrish, p. 46.

[28] Earl D. Ross, "The Evolution of the Agricultural Fair in the Northwest," *Iowa Journal of History and Politics*, XXIV (July 1926), 445–480.

[29] Morrish, p. 44.

[30] *Ibid.*, p. 63.

county fair grounds, or erected tents and other temporary structures. In 1865 the fairgrounds at Minneapolis consisted of sixty acres surrounded by a twelve-foot board fence. On the grounds were a good track, a headquarters building, a floral hall, dining hall, ladies' reception room, stables, and stock pens.[31]

The pattern of the fair had evolved to consist substantially of a fence enclosing track, stables, pens, and some permanent halls. Largely outside the fence were the temporary tents of the showmen, the old equivalent of the modern midway (Fig. 3).

The Pattern: 1870–1890

The two decades succeeding the golden age were little if any less prosperous for the agricultural fair. It spread widely to new areas and intensified its activities in regions where it was already well established. Accompanying the continued growth of general agricultural fairs was a marked increase in the number of expositions, shows, and fairs devoted to limited and special interests, such as stock in general or single breeds of cattle, or general and specific aspects of horticulture.

Throughout the period the argument continued vigorously between those who favored a greater emphasis on amusements and those who would restrict the fair's activities to its original educational purposes and procedures. Educational functions continued to expand upon the old base of displays. In 1872 at St. Paul the land departments of railways erected buildings to house exhibits from areas they wished to advertise;[32] in 1876 merchants had a special trade building in which to display their wares.[33] State agencies made greater use of the opportunity offered by the fair to present educational exhibits. The quality of judging was improved by substituting experts for amateurs.[34]

On the other hand, evening discussion sessions declined almost to the vanishing point. The formal annual address continued, but it deteriorated greatly in relative importance, as illustrated by the Iowa state fair of 1874, where the president of Iowa State College delivered the annual address from the track in front of the grandstand between heats of the speed trials![35] Thus was inaugurated a practice that continues to the present day. Of the older mild concessions to amusements, plowing contests were fewer and ladies' riding contests no longer important. Baseball, on the other hand, got its start in the 1860's and games were prominent features of the fairs' entertainment programs for a number of years.

Despite almost fanatical opposition, amusements expanded in importance. Horse racing remained a vigorous issue. Speed trials were readily justified as contributing to the improvement of an important breed of animals, but actual racing offered abundant motive and opportunity for gambling. Racing became immensely

[31] *Ibid.*, p. 47.

[32] *Ibid.*, p. 49.

[33] *Ibid.*, p. 50.

[34] Ross, p. 469.

[35] Neely, p. 92.

popular among both urban and rural inhabitants. In 1872 trotting races held near the Elmira, New York, fair drew so heavily that the fair suffered from poor attendance.[36] However, incorporation of outright racing with the fair, especially in the conservative Northeast, was a different matter, for as late as 1870 professional races were advertised falsely as held "in connection with" a New York county fair. As a result of unfavorable opinion the fair was forced to liquidate its assets and cease to exist.[37]

Ross[38] points out that there was a general lowering of morals after the Civil War. Games of chance, use of intoxicants, and carnival features of questionable character expanded in a tolerant environment. Fair crowds were fertile ground for the cultivation of commercialized amusements. Thus it was that carnivals and associated phenomena made their move for inclusion in the fair.

It became increasingly difficult for fair executives to refuse paying customers what they clearly wanted in the way of amusements. The lack of success of the St. Paul, Minnesota, fair of 1874 was attributed to the "puritanism" that denied prospective visitors horse racing and beer.[39] The very successful Minneapolis fair of 1877 was featured by a fine race track, plenty of beer stands, and shows.[40] The directors of the Minneapolis organization decided to offer prizes to bring good horses to their fair, and they added to the society's revenues by leasing the track to professional racing organizations during the off season. In 1880 the New Jersey state fair offered speed premiums in order "to improve the breed" of road horses.[41] Officers of the Iowa state fair of 1882 acknowledged that trotting races were about the only feature of the fair that paid its own way. They remarked how the crowds hurried through the gates directly to the track to see the trots, generally with but little attention to the educational exhibits.[42] During the eighties adjacent fairs were organized in circuits to avoid competing dates and be able to command fast horses, good exhibits, and choice entertainment.

The apparent surrender to racing was not without vigorous opposition. Final acceptance of racing as an integral part of the fair did not come until the twentieth century, and even then it came grudgingly. To this day there are highly articulate individuals and groups ready to oppose any act they consider undue emphasis upon what is now purely a sport. And it is indicative of the perseverance of old attitudes that the fair official in charge of racing is still euphemistically "superintendent of speed," rather than "racing secretary," the term usually employed at betting tracks.

Miscellaneous additions to the fair program such as dog shows and evening per-

[36] *Ibid.*, p. 108.
[37] *Idem.*
[38] *Op. cit.*, p. 472.
[39] Morrish, p. 40.
[40] *Ibid.*, p. 51.
[41] Neely, p. 195.
[42] *Idem.*

formances appeared during the era. The latter were a substitute for the old evening discussion sessions in their utilization of time only, for the newer features were purely for entertainment.

A notion of the variety of diversion served the fair-goer of the period is conveyed by the program of the Rhode Island state fair of 1888, possibly an exaggerated example. There were a grand tournament of bicycles; a couple married in a balloon and departing in it on their honeymoon; polo games; steeple chasing; a football match; and racing—of wheelbarrows, greased pigs, men in sacks, and horses.[43]

The nuclear and fixed pattern of the fair for this period was little different than the preceding. The high board fence was a persistent element. Inside the fence the most striking feature was the combination of track, grandstand, and stables associated with racing. In many cases a baseball diamond was outlined within the track infield. Aside from the above-mentioned, the permanent installations consisted of a few sheds and halls.

During the fair season the pattern was supplemented by temporary wooden pens and buildings, the tents of the shows and other carnival features, the camps of visitors, and the acres of buggies and carriages of local people attending for the day (Fig. 4).

The Pattern: 1890–1910

For the American agricultural fair the two decades between 1890 and 1910 were a period of change and adjustment to meet creakings of the national economic machine and a burst of technical advances.

The severe financial panics of the nineties took their toll of fairs. By 1900 the weak had been pretty well weeded out and the number and identity of fairs settled down to something approaching a fixed list. State fairs largely completed their selection of permanent sites during this period. Both state and county fairs were generally prosperous after 1900, enabling the more fortunate to invest in substantial buildings and other costly improvements.

The educational elements of the agricultural fair remained centered upon displays of livestock, crops, and the fruits of home arts and crafts. Less attention was given to the freakish and pathologic accidents of husbandry and more to good quality and high yield. Place was made increasingly among the exhibits for non-utilitarian works produced by farm families, thus recognizing esthetic as well as practical accomplishments.

Of the lesser educational features of the early eighteen-century prototype, the parade found perhaps a remote descendant in the procession of prize livestock that became a common practice in the nineties. The evening discussion session was gone, and the religious sanction and the singing of odes as well. The annual address had deteriorated in the main to a political speech, which commanded a sizeable audience only when sandwiched between sports events or vaudeville acts.

Sports and amusements threatened more than ever to run away with the fair.

[43] Neely, p. 107.

Horse racing needed no stimulus to popularity, but carnival attractions were given a tremendous boost by the midway of the Chicago World's Fair of 1893. Also derived from the Chicago fair were elaborate productions such as the Chicago Fire, Last Days of Pompeii, and the Siege of Port Arthur, staged at night in front of the grandstand with lavish effects.[44] These spectacles, together with fireworks displays and band concerts, packed the grandstands and further emphasized the night sessions. They served to attract to the fairs large numbers of city dwellers who had not the slightest interest in agricultural exhibits.

Horse racing as such was finally, albeit reluctantly, conceded a place on the program of the fair—just in time to meet in the automobile a rival for popularity in racing and a means of conveyance that was virtually to exterminate the road horse. Another technical advance, the airplane, was soon to drive out the balloon ascension as a featured attraction. As if a sop to the past, horse-pulling contests rose to considerable popularity, a status they have maintained to the present.

The upsurge of the amusement function was not without the accompanying evils of gambling and drunkeness, and breaches of good taste in connection with the midway. There were strong protests, true to old usages, and both successful and unsuccessful attempts to bar gambling, liquor, fakirs, and licentious shows.

For the period 1890–1910 there are many popular descriptions of fairs appearing in the contemporary periodicals. Analysis of a number of writings shows the pattern of the fair to have been everywhere much the same, with but slight concession to sectionalism. A composite[45] picture of Northeastern fairs begins with the alluring pre-fair posters displayed on barns and fences, and proceeds to mention of tents and stands and acres of buggies, all outside the "wooden walls" enclosing the fairgrounds. Inside the fence are long rows of cattle pens and a line of exhibition halls, one devoted to music and the others to displays of farm machinery, the smaller farm animals, crops, and home arts. A festive spirit is encouraged by flying pennants and strains of the music peculiar to fairs and circuses. Interspersed among the tents of the midway are the church-sponsored ice-cream stand and chicken-pie dining tent, the latter with its traditional oilcloth-covered tables, white porcelain dishes, and backless benches.

Promptly at race time at least nine tenths of the crowd fill the grandstand and jam the paling fence that surrounds the track. Between race heats on a platform near the judges' stand are performances by gymnasts and high-rope walkers, and a political speech. From the infield, also between races, there is a balloon ascension and parachute jump.

Accounts from Pennsylvania[46] for the same general period agree closely with

[44] *Ibid.*, p. 115.

[45] Howells, *op. cit.*, pp. 163–167.
Nelson Lloyd, "The County Fair," *Scribner's*, XXXIV (Aug. 1903), 129–147.
"The Spectator," *Outlook*, LXXV (Oct. 10, 1903), 349–350.

[46] Elsie Singmaster, "Big Thursday," *Century*, LXXI (Jan. 1906), 364–379.
Eugene Wood, "The County Fair," *McClure's*, XXV (Oct. 1905), 595–607.

the preceding. One item, however, was hardly characteristic of the Northeast, a bar two blocks long, erected next the fence. The midway, with its shows, merry-go-round, and giant swing, is little different. Possibly because they happened to catch the eye of the observer and represent no real difference, there is mention of a horse-pulling contest, square dancing in the fine-arts hall, and the prominence of cider and toy whips at county fairs.

Nothing contrary to the basic pattern is mentioned for Midwestern fairs.[47] One account stresses the absence of horse trading and confidence men, while another dwells on the new note introduced by automobile exhibits and races, and yet a third mentions a black tent in which motion pictures were shown, all innovations or exceptions to traditional procedures. Variations on familiar themes are the African dodger, a dancing bear, a wedding in front of the grandstand, and opera at night.

For the second successive period there was little change in the permanent pattern of the type fair. Only the well-financed state fairs had added to the established combination of fence, track, grandstand, barns, and a few halls, and they merely to the extent of more and better-constructed buildings, improved streets, and some concessions to sanitation. The stage next the judges' stand and the primitive runway for planes within the track infield were minor fixed additions.

The most significant changes came in the temporary elements associated with fair week, notably a few automobiles intermingled with the horse-drawn vehicles in the parking spaces, and the installations in connection with the afternoon performances before the grandstand and the night spectacles held in the same place. Still dominant was the familiar combination of temporary sheds and halls, the tents of the midway and associated enterprises, the distinctive noises, and the milling crowds (Fig. 5).

The Pattern: 1910–1930

The period between 1910 and 1930 generally favored the agricultural fair. The slackening in activity during World War I was more than counterbalanced by the unparalleled prosperity of the 1920's. In 1927 over two thousand agricultural fairs held in the United States and Canada entertained over forty million visitors; each of sixteen fairs owned property valued in excess of a million dollars.[48] The Toronto exposition of 1929 alone had a thousand exhibitors and nearly two million visitors.[49] The economic structure, especially of state fairs, was strengthened by increased governmental support.

Functionally the fair made rather completely the necessary adjustments to the

[47] Lloyd, *op. cit.*, pp. 129–145, *passim.*

Urban Lavery, "The Romance of the Country Fair," *Independent*, LXI (Sept. 6, 1906), 552–556.

Julius Moritzen, "The Country Fair," *Cosmopolitan*, XXX (Dec. 1900), 153–161.

"The Spectator," *Outlook*, LXXXVII (Nov. 2, 1907), 474–476.

[48] *Encyclopaedia Britannica*, 14th ed., IX (1929), p. 26.

[49] Kathryne V. I. Junkin, "International Fairs and Expositions," *Dept. of Comm., Trade Promotion Series*, No. 75 (Wash., 1929), 7.

mechanical age. In some cases anachronisms persisted, so they had to be rationalized on a new basis. In other cases the old gave way completely to innovations of the new era. For example, horse racing continued to thrive, but as a "gentlemanly sport" lacking the justification of a utilitarian contribution. Balloon ascensions, on the other hand, had almost completely disappeared by the end of the period, to be replaced in part by plane exhibitions.

The old struggle for priority between education and amusement swung definitely in favor of the latter, so much so that Wiest[50] felt constrained to explain that fair day is the realization or culmination of agricultural organization and education rather than a medium for the education of the public; that it is a show day, a gala day, designed for the enjoyment of the fruits of labor. The change in attitude from the time of Elkanah Watson could hardly be more complete.

Not to be entirely overshadowed, the educational functions of the fair were refined and sharpened. Displays were made more appealing and meaningful. Educational agencies demonstrated the latest approved agricultural procedures. Manufacturers catering to farmers and farm families made better use of exhibits and demonstrations. There were attempts to present as speakers persons prominent in a field of importance to agriculture.

On the side of amusements, trotting races retained their popularity as the leading attraction. With racing there remained many old favorites of the midway, with some more-modern adaptations. Daily free acts and nightly shows before the grandstand continued the precedent set in previous decades. Recognition of the newer mechanical inventions gave automobile, plane, and motorcycle riding importance in the field of entertainment.

Contemporaneous with such marked transitions in ideas and material expressions, it is both refreshing and a bit nostalgic to encounter in at least one instance ways that might have seemed familiar to Elkanah Watson, and in a spot not far from the birthplace of the American agricultural fair. A kind of vestigial fair is described by Chase for the New England of 1912.[51] It was a Grange fair held for one day. The site was a big enclosed pasture in which were erected tents and temporary buildings. There was a modest midway, but more important were echoes of the past in the form of a plowing match between ox teams, an address by the Grange president, prayers, singing, and even reference to the occasion as a "cattle show" by an old man. The displays, judging, and prizes were the core of the fair.

Again the permanent pattern of the fair differed little from that of the preceding period. Track, grandstand, and accompanying stables remained the most prominent off-season elements. A surrounding fence was still a normal feature, though frequently made of wire rather than boards. Barns and a few exhibition halls completed the equipment of the county fair.

[50] Edward Wiest, *Agricultural Organizations in the United States* (Lexington, Ky., 1923), 361.

[51] Sidney M. Chase, "Asahel and Lavinia at the Fair," *Outlook*, C (Feb. 24, 1912), 455–464.

The greatest changes are to be noted for the temporary installations and mobile phenomena of fair time: the increase of automobiles over horse-drawn vehicles, the appearance of automobiles and motorcycles upon the track, and the presence of planes and tent hangars in the infield (Fig. 6).

The Pattern: 1930–1949

Fairs suffered many casualties from the financial depression of the early thirties. A considerable number were forced to close and others operated on a limited scale. As the national economy moved back toward "normalcy," so did fairs. They were well on the road to full recovery when World War II caused a relapse. Many state fairs ceased to operate because their grounds were taken over for sundry purposes by the government. County fairs were adversely affected in various degrees by a shortage of gasoline, by unusual demands upon the time of both farmer and workman, and by reduced interest.

As war receded into the past and generally prosperous times succeeded, fairs thrived once more. Some were revived that had not operated since the depression of the 1930's. Attendance and profit in many individual cases broke all records. At the present writing fairs give the impression of enjoying vigorous good health.

Fairs have been successful during these most recent times, not only because prosperity is general but also because they have wittingly or accidentally adapted themselves and their activities to the mechanical age, to a population that is more largely urban than rural, and to cleverly conceived competition for crowds and their money. Fairs have preserved from the past those things that still have appeal; they have similarly borrowed from the new. They have gauged their procedures to the modern tempo of moving and living.

The present-day fair does not neglect its original educational functions. Exhibits are better selected and more expertly judged. Parades of livestock are public acclaim of accomplishment on the part of the breeder; spirited auctioning of prize animals emphasizes the monetary value of good husbandry. Governmental and educational agencies make the fair a major medium in their work. They conduct farmers' institutes at the larger state fairs; organize exhibits revealing the strength and weakness of areas of specialized production; and demonstrate latest procedures. Manufacturers of farm machinery continue to be active exhibitors and demonstrators. Frequently fairs are sponsored by 4-H clubs, leaving no doubt as to the propriety of retaining the term "agricultural" in connection with their name.

The apparent good health of the educational features of the fair has not come at the expense of the sport and enterainment functions. In fact, the latter make such an impressive showing as frequently to convey the erroneous notion that fairs are nothing more than amusement parks.

Trotting races remain the chief attraction of the entertainment features of the fair. Only a decade ago, after harness racing had become purely a sport utilizing a breed of horses which no longer had any utilitarian function, the early demise of the institution was predicted by many observers. However, for a variety of

reasons, some of them obscure, trotting racing is correctly spoken of today as "America's fastest growing sport." Betting tracks led the way in modernizing sulky races in such a manner as to make them seem no anachronisms in this mechanical era. Fast track-maintenance equipment; quick, fair starts with the use of a gate; the employment of photo finishes; and a reputation for honesty have brought the sport to an unprecedented popularity with both urban and rural audiences.

The fair track facilities are also commonly utilized for automobile racing, another well-patronized sport. Baseball is still played on a diamond in the track infield of some fairs, while fooball games are featured events in a few sections where fairs are held in late autumn. The track infield also serves as landing field for stunting airplanes. And on the permanent stage next the judges' stand take place the free acts between races, the political speech, and the elaborate shows of the evening performances. In the near background, readily visible from the grandstand, is the framework of trapeze or high wire, used for both afternoon and night shows. Generally employing grandstand and track are the daytime horse-pulling contests, which always draw large audiences. Even this old spectacle has been modernized, in the form of a mechanical device to measure power accurately.

The midway and associated features have changed little in the last several decades. Merry-go-round and Ferris wheel seem to have lasting appeal, as is true of fortune tellers, photographers, side shows, and the hammer test, to mention a random sampling. There are of course always minor innovations. The greatest changes seem to be in the form of new mechanical devices for various kinds of rides.

Generically the permanent forms of the fair remain true to the long-established pattern. Wire largely replaces wood in the construction of new fences surrounding the grounds, but there has been little change in the design of grandstands and the layout of tracks and track fences. Only the larger state fairs are adequately supplied with permanent buildings, substantially built. There in weatherproof housing are livestock, judging arenas, machinery exhibits, agricultural displays of all kinds, administrative offices, and special facilities for women and children. The bigger organizations have thus largely neutralized bad weather as a threat to their success.

Even the temporary installations of fair time have been forced to make but slight concessions to modernity over those of the decades immediately preceding. Perhaps the most striking are the large trailer camps, situated in the track infield or other convenient spot, and providing housing for horsemen, performers, exhibitors, and ordinary visitors (Fig. 7).

SUMMARY

This paper has attempted to show the development of the pattern or form complex of the American agricultural fair. The point has been repeatedly stressed that pattern fits function. The modern fair is the result of an evolutionary growth that brought together functions that had developed separately. The major functions of the fair are education and amusement; the latter has two integral parts in racing and the midway. The American fair began with only an educational function. To it in order were gradually united racing and the carnival or midway.

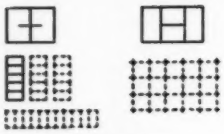


FIG 1.—c. 1812.

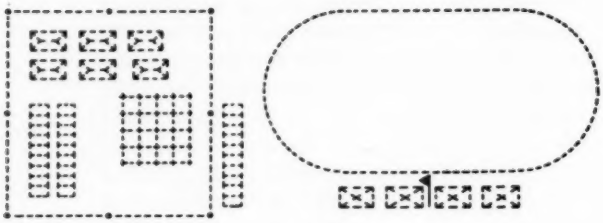


FIG. 2.—c. 1840.

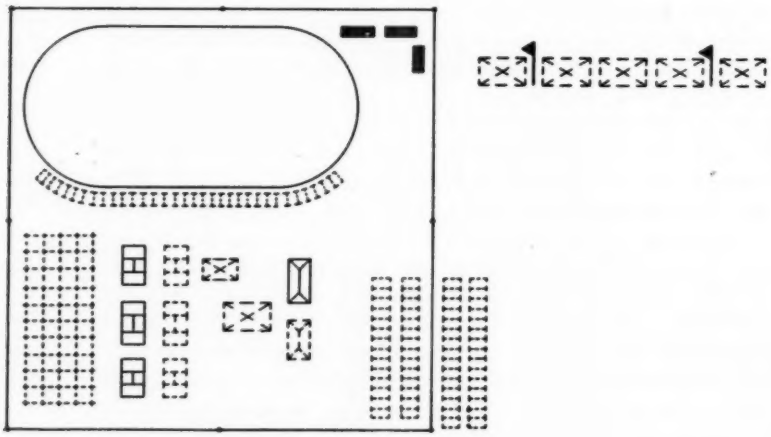


FIG. 3.—c. 1860.

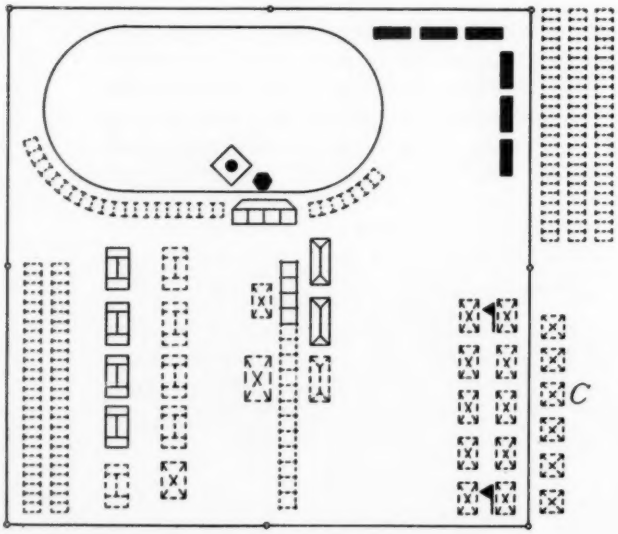
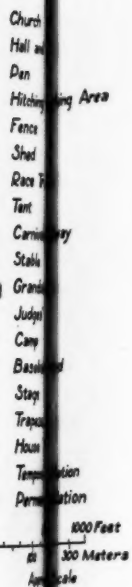


FIG. 4.—c. 1880.

F THAIR PATTERN



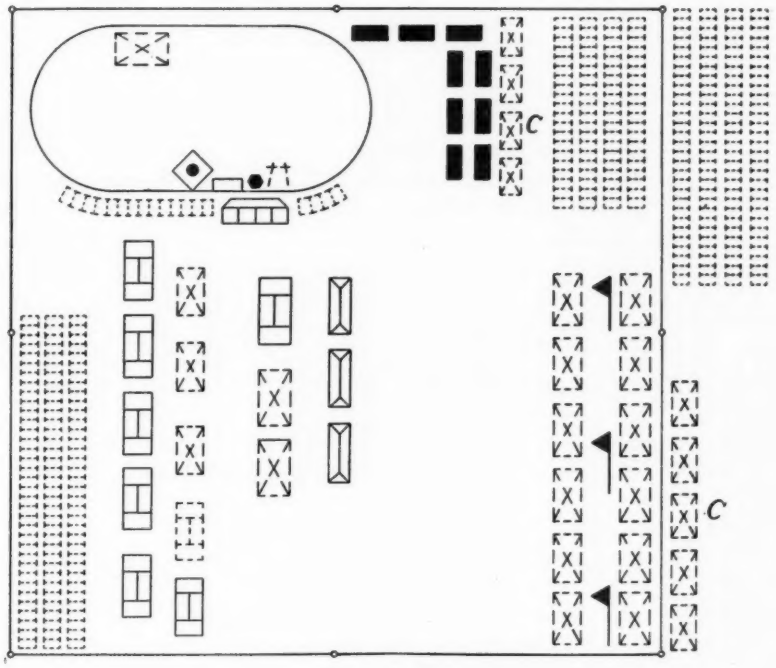
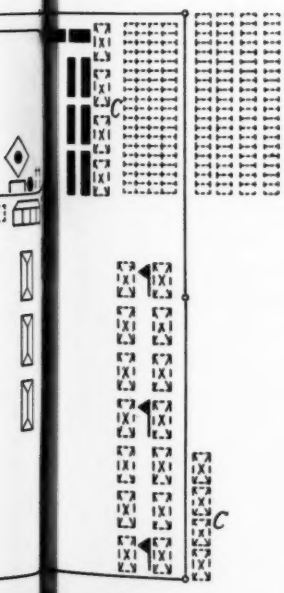


FIG. 6.—c. 1920.



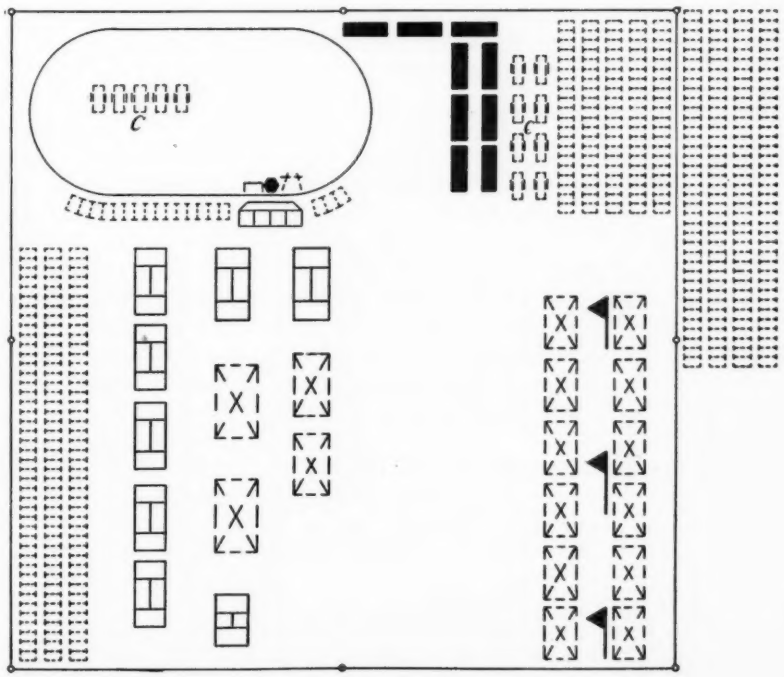


FIG. 7.—c. 1948.

The pattern of the fair consists of two parts: a set of permanent installations; and a group of ephemeral structures, erected and removed with each active season. The permanent part of the pattern was distinguishable in its modern form by 1870. Then as now it consisted primarily of fence, track, and grandstand, with barns, sheds, and halls varying in number and quality with the size and financial status of the individual fair.

The most striking changes in mass effect are part of the temporary pattern, above all the replacement of acres of horse-drawn vehicles by relatively much larger areas of parked automobiles, and the appearance of trailer camps as successors to the tent camps of an older era. On the other hand, the tent street of the midway has changed little since its acceptance late in the nineteenth century.

AN ANALYTICAL APPROACH TO MAP PROJECTIONS*

ARTHUR H. ROBINSON

University of Wisconsin

THE recognition of the various kinds of deformation inherent in map projections has usually been based on the knowledge of their construction. Most atlases and elementary texts in geography include small cuts showing in diagrammatic manner the projectional basis for transforming the spherical graticule to a plane graticule. A few notes on the major properties of projections and their significance generally closes the account. This probably leads more toward mystification than recognition. The standard volumes on elementary cartography likewise treat projections almost entirely from the point of view of their construction, and the recognition of their properties is largely based on the memorization of specific projections. While cartographic treatises obviously must include constructional methods, it is questionable whether this single approach is as efficient as possible in providing the background necessary for the critical and intelligent use of maps.

Within the past decade or so there has been a remarkable trend toward the use of azimuthal projections,[1] and the maps thereon have been termed "air-age," "global," and given other equally meaningless names. That there has been relatively little criticism of the projectional aspects of these maps does not speak well for the present approach to the understanding of projections. Particularly disturbing is the growth of the apparently unchallenged notion that maps should be made as "globe-like" as possible. By implication and by direct statement any map projection, be it "global" or other, is a poor substitute for the globe. In recent years one has frequently read "the age-old problem of the map maker"; or, "it is impossible to represent the round earth on a plane without sacrificing some element of truth"; or some similar lament that the earth is not flat. One is tempted to conclude that a map projection is thought of as a kind of negative thing.

A map projection should be considered as a valuable device, not as a poor substitute for a globe, regardless of the number of orange peels squashed in the latter's behalf. There is no question that the phrase "there is no substitute for a globe" is as misleading as it is hackneyed. The vast majority of cartographic presentations are of subjects and relationships that would not be nearly so effective if they were actually presented on a spherical surface. The implications of the inability of the eye to look at more than one point of a spherical surface in plan (undeformed by perspective) are worthy of considerable reflection.

Any map projection is a triumph of ingenuity, and we ought to be proud

* This manuscript was submitted for publication in March 1949.

[1] S. C. Gilfillan: "World Projections for the Air Age," *Surveying and Mapping*, Vol. 6, 1946, pp. 12–19; Erwin Raisz: "Map Projections and the Global War," *The Teaching Scientist*, Vol. 2, 1946, pp. 33–39.

of it. We ought to know enough about the simple three dimensional earth to choose and use intelligently the dozens of plane representations available. We should be questioning in our attitude toward projections. We should ask, for example, on what bases can the choice of the familiar azimuthal equidistant "polar" projection be justified? The answer is likely to be "none." The property of being azimuthal means merely that directions or azimuths (the compass reading from one place toward some other place along the great circle) are correct from *one point,* in this case the pole, to all other points. In the polar phase azimuthality is meaningless, for all places are south from the north pole. The property of equidistance means that scale distances measured along a straight line from a single point (again the pole) are correct. If one remembers the elementary fact that degrees of latitude are nearly equal and are very close to 69 miles, or roughly 70, in length, it is not difficult to calculate how far any place is from the North Pole. It would probably be as easy to do it in one's head as to scale it on the projection. In any instance, distance to the Pole can scarcely be of sufficient value to enable this projection to supplant the many other possible representations. But that, together with the fact that all points on the earth are south from the North Pole, is all of value that the polar phase of the azimuthal equidistant projection provides. Further, areas are incorrectly represented; great circles are not straight lines (except across the pole); angular relationships are not particularly good; distances (except north-south) are dubious and become exaggerated in the extreme beyond more than 30 or 40 degrees from the Pole. All in all, its choice is difficult to justify.

On the other hand this same azimuthal equidistant projection is quite justifiably the proper choice for maps where its properties are not so obviously wasted. For example, when centered on an area of interest such as a transport center or a radio broadcasting center, it provides the reader with information not easily obtainable in any other way. The fact that areas, angular relationships, non-radial distances, and other facts are not correct becomes insignificant in comparison with positive qualities.

Other examples of the misuse of projections are many and need not be listed. Except for the fashionable libeling of Mercator, criticism aimed toward correcting the misuse of projections is rare indeed. Yet, if one is to have a good understanding of world relationships, it is necessary that he appreciate the possibilities and the limitations of the map projections upon which the distributional data are presented.

The foundations necessary for the appreciation or understanding of map projections for general use are few and are quite elementary when untangled from their mathematical aspects. They may be most easily approached by way of the following divisions:

1. The shape of the earth.
2. The characteristics of the earth grid.
3. The properties and attributes of map projections.

Elementary consequences of the earth's shape, such as its all-side curved

surface and great circles, and others more related to its grid, such as direction, are fundamental to an understanding of projections. Their learning is in no way difficult, for the earth is not a complicated shape. On the contrary it is a shape within almost everyone's everyday experience.

The earth grid is somewhat more complex, but, if one fully appreciates the earth's shape, it is not difficult to grasp the essentials of the man made grid and to learn its visual characteristics.[2]

1. Parallels are parallel.
2. Parallels are spaced equally on meridians.
3. Meridians and great circles are straight lines (if looked at perpendicular to the earth's surface *as is true on a map*).[3]
4. Meridians converge toward the poles or diverge toward the equator.
5. Meridians are equally spaced on the parallels, but their distance apart decreases from the equator to the pole.
6. Meridians at the equator are spaced the same as parallels.
7. Meridians at 60° are half as far apart as parallels.
8. Parallels and meridians cross one another at right angles. (Therefore, with No. 10 below, the compass rose is the same anywhere).
9. The area of the surface bounded by any two parallels and two meridians (a given distance apart) is the same anywhere between the same two parallels.
10. The scale at each point is the same in any direction.

These visual characteristics constitute a kind of analytical key or check-list by which projections can be evaluated in terms of the properties they present.

The properties of map projections, or the truthful elements of areal relationships they can present, make a goodly list ranging from the ability of the Mercator to "straighten out" a loxodrome to the more complex equivalence of the Albers. From the list of properties only two are of general importance from the point of view of small scale, non-technical map use.[4] These are equivalence and azimuthality.

[2] In the following list several slight variations have been approximated in order that the principles may be more clearly grasped. In number 2, parallels actually vary in their spacing by about .7 mile; in number 6, the discrepancy is negligible; and in number 7, there is a difference of about .1 mile. None of these approximations would be of significance in a general use map with a scale smaller than 1 : 2,000,000.

[3] If one looks directly at a globe the great circles passing through the point nearest his eye will appear as straight lines. Most projections are attempts at presenting the spherical surface in plan undistorted by perspective, i.e. so that the eye is assumed to be directly above each point of the map.

[4] There are many qualities of map projections such as parallel parallels and others of the visual characteristics which can be called useful attributes of the projection grid rather than actual properties. These are of particular importance in choosing projections from a "property group" for a particular purpose, such as presenting world temperatures which might require the property of equivalence and the attribute of parallel parallels. The evaluation of attributes is, of course, similar to that of the actual properties.

Equivalence or equal-area is better known among geographers than the others. It simply means the presentation of correct area relationships. It is particularly important when statistical devices are employed which depend for their effectiveness upon a density impression provided through a comparison of the number of symbols spread throughout a given area. It would seem, however, that the quality of equivalence is accorded somewhat greater significance by geographers than it actually warrants. The human eye is not particularly precise in its observation of irregularly shaped areas. Even if a person happened to know the actual areas of the Soviet Union and India, it is unlikely that he would be able to recognize even a 15% total error in their area representation. Consequently, when certain kinds of statistical representation or the actual measurement of area are not involved, it appears logical that improvement in the presentation of other properties might well provide a better total representation than would strict equivalence. At any rate, the judgement of equivalence or relative equivalence is possible through a knowledge of the characteristics of the grid, particularly number nine (the area of the surface bounded by any two parallels and two meridians is the same anywhere between the two parallels). This, in combination with characteristics five and six, will enable one to determine at a glance most of the equivalent or nearly-equivalent grids. Further, a little logic applied to the relationships between parallel-spacing and rate of meridian convergence or divergence (as suggested by characteristic seven) will reveal the adjustment of parallel spacing necessary for equivalence if all meridians are shown as straight lines.

Azimuthality is here included among the few generally important properties, not because there is anything particularly significant about the property itself, but rather because on azimuthal projections the distribution of the various kinds of deformation is so fortunate (and easily remembered). As was pointed out earlier the property of azimuthality means only that from one point, or two (in rare instances), azimuths to other points are correct. An azimuth being merely the compass reading of the angle between the local meridian and the great circle to a particular place, is, therefore, of value only if some kind of movement between the two points in question takes place or is contemplated as taking place. Otherwise such information is generally useless. For most non-technical purposes this is true. The great advantage which the azimuthal projections have, which is not shared by any other class of projections, is that the deformations are symmetrical around the central point and increase outward from that point. This is most clearly seen by comparing the polar phases of these projections wherein it is evident that the only difference is in the spacing of the parallels. One spacing presents equivalence, another conformality, another equidistance, and so on. Since the distribution of deformations is symmetrical no matter where the central point may be located on the earth, it is possible to evaluate the presentation with considerable ease from memory. The recognition of the properties or near properties is, as usual, based on "testing" the map grid against the visual characteristics of the earth grid.

Not many cartographers and probably even fewer map users are familiar with a class of map projections called minimum error projections. These are the graticules which result when various of the relationships of the globe surface, such as areas, shapes, etc., are balanced so as to present as realistic a plan of a spherical segment as possible. For the majority of general maps on which one should not and usually does not try to measure areas or work navigation problems, it appears logical that more frequent use should be made of minimum error projections. A number of others which present specific properties, such as the Lambert Conformal, Albers Equal-area, and the Lambert Equal-area, come fairly close to being included in this group. The properties or lack of properties of minimum error projections in general are difficult to recognize by their visual characteristics. From our point of view this makes them good projections. By careful analysis one can determine that a projection is at least not far from being equal area or does not obviously deform angular relationships. For most non-technical map use that is quite sufficient to allow us to employ the map with confidence. Only the cartographically uninformed would attempt to derive precise concepts from an unknown projection. Since it is manifestly quite impossible to anticipate all possible uses (or the uninformed, for that matter), it is quite appropriate in many instances for the cartographer to present the most generally satisfactory presentation—a compromise.

It seems logical not to include conformality as one of the primary properties of projections for general use. This property is indispensable to navigation and certain other uses such as synoptic charts which require a symmetrical compass rose anywhere on the map. Because of its familiarity and because it has been of great interest to mathematicians, conformality has been widely publicized, but it is difficult to justify its use in any but the most specialized cases. Conformality means only that characteristics eight (parallels and meridians cross one another at right angles) and ten (the scale at any point is the same in all directions) are presented. This combination does not provide "true" shape as is often asserted. For small areas almost any projection provides essentially the same angular representation if the area is at or near the point of least deformation. The conformal projection does this for any small area, but the required change in scale from point to point usually makes the terms "conformal" and "orthomorphic" appear almost ridiculous when applied to maps of hemispherical extent. Many non-conformal projections present the shapes of large areas much more effectively.

A projection is a systematic arrangement of the earth grid (obviously on a plane surface) for the purpose of presenting one or more important characteristics of that grid. The term *presenting* is here used rather than the more common *preserving* since the whole purpose of most maps is to "present." Too large a proportion of our literature on map projections has come from the mathematician whose problem is one of devising a plane grid which *preserves characteristics*. Not enough similar systematic work has been done by the users and makers of maps on the problems of selection and presentation. When one is familiar with the ten characteristics

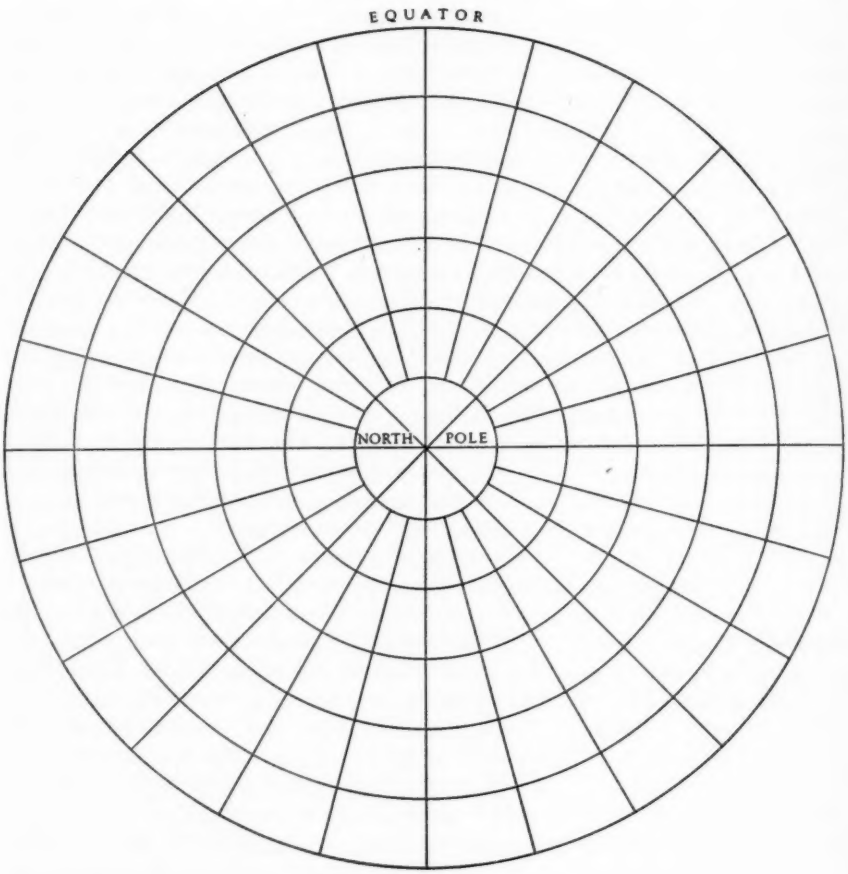


FIG. 1. Since a series of straight line meridians (3), which are, of course, arcs of great circles, converge to a point and are properly arranged around the point as shown by their equal spacing on each parallel (5) the projection must be azimuthal from the point of convergence. The foregoing plus the fact that the parallels are equally spaced on the meridians (2) makes it evident that there is no scale change along the meridians, hence the projection must be equidistant from the point of convergence. Because, however, on the projection the meridians at the equator are not spaced the same as parallels (6) the scale cannot be equal in every direction from each point. Hence it cannot be conformal. Also, since the scale along the meridians has been shown to be correct by the spacing of the parallels (2) and the fact that azimuths from the pole are correct make it likely that the central (polar) area is close to truth. If that is true, then the equatorial areas are disproportionately large because of the excessive distances between the meridians (6). Therefore, the projection cannot be equivalent. This is, of course, the too-familiar polar azimuthal equidistant.

of the earth grid the recognition of the existence or lack of many of the properties and attributes of most projections is relatively easy. In the majority of the cases when the analytical approach does not supply the answer it is safe to assume, for ordinary purposes, that the map grid is fairly close to reality. As examples of the ease with which these characteristics can be used as analytical guides in the recognition of the qualities and deformations presented by map projections, segments of two common projections are shown below. By analyzing them on the basis of the ten characteristics listed the following useful judgments are possible. The numbers of the characteristics referred to are placed in parentheses.

The foregoing has attempted to provide justification for the assertion that our appreciation of map projections for general use is not realistic. The fears of the average map user that the subject is shrouded in mathematical mystery are, unfortunately, largely true at present. Most of the writing on projections has been done by mathematicians and this has resulted in an unwarranted proportion of the literature being concerned with the construction of projections. Relatively little effort has been expended on the subject of evaluating map projections, particualrly for general use. The average map reader has been content to accept some of the standard properties with not much thought as to their actual utility. Even our conventional classification of projections (Cylindrical, Conic, etc.) is based on the

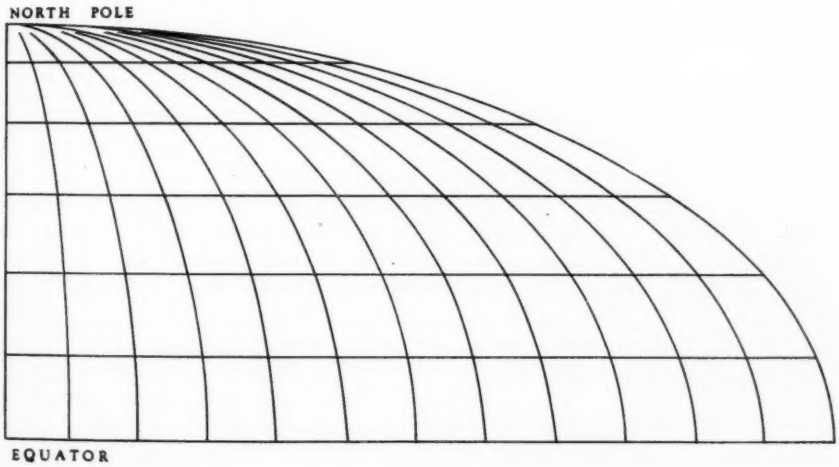


FIG. 2. Since neither is the scale the same in every direction (10), as shown by the disproportionate length of the meridian sections at the equator (6), nor can the compass rose be the same since parallels and meridians do not cross one another at right angles (8), the projection obviously is not conformal. Because numbers nine (9), and five (5) appear to be satisfied it is likely that the projection approaches equal area. Because the parallels are not equally spaced (2) and because they do not always cross meridians at right angles (8) it is evident that angular relations are greatly distorted. This is the familiar Mollweide projection.

theoretical methods of construction rather than on the seemingly more logical basis of utility. The analysis of the primary qualities and short-comings of the majority of projections used for general maps need depend neither on a knowledge of their construction nor upon mathematical competence. By applying the ten characteristics of the earth grid the map user may venture with relative confidence into this hitherto mysterious field.

Obviously such an analytical process will not lead to answers for all the questions which may occur, for this kind of analysis cannot make an expert of anyone. However, the colossal ignorance of the average map user regarding projections is prima facie evidence that he requires such a guide.

BAILEY WILLIS, 1857–1949

S. S. VISHER

DR. WILLIS, a charter member of the Association of American Geographers and vice president in 1918, died February 20, 1949, in his 92nd year. He had long been the oldest member of the Association, but continued active in research until past 80, and relatively active until past 90. He had been known as a distinguished geologist since the 1890s, widely recognized for his outstanding field studies in Asia, South America, and Africa, as well as in the United States. He was geologist for the northern transcontinental survey for the Northern Pacific Railway, 1881–1884; geologist for the U. S. Geological Survey, 1884–1911 (assistant to the director 1897–1902, in charge of areal geology 1900–02); lecturer in geology at Johns Hopkins University, 1895–1902 and at University of Chicago, 1909; professor of Geology at Stanford University, 1915–1922; and professor emeritus since 1922. He engaged in field research in China, 1903–04, for the Carnegie Institution of Washington, and in Patagonia for the Argentine government, 1911–1915. He made seismological expeditions for the Carnegie Institution of Washington to Chile, 1923; to Palestine and Cypress, 1927; to East Africa, 1929; and to Japan and India, 1937.

Dr. Willis was the author of many papers and of ten books. The titles of chief interest to geographers are perhaps "Structure of the Appalachians," 1893; "Paleogeography of North America," 1909; "Outlines of Geologic History," 1910; "Geologic Map and Stratigraphic Index of North America," 1912; "Essays on Earthquakes," (*Bulletin of the Seismogological Society*) 1926; "The Dead Sea Problem," 1928; "Continental Genesis," 1929; "East African Plateaus and Rift Valleys," 1936; "American Geology 1850–1900," (*Science*) 1942; "Looking Ahead," (a sketch of the earth's development, Penrose Address, *Proceedings of the Geological Society of America*) 1944; "A Yanqui in Patagonia," 1947 (partly autobiographical, for the first 50 years of his life). A full bibliography presumably will be found in biographical memoirs of the Geological Society of America and of the National Academy of Sciences.

Dr. Willis' outstanding research and effective presentation of his findings led to numerous honors. He was starred in "American Men of Science" 1906, was awarded an honorary doctorate by the University of Berlin in 1910, and by Columbia University in 1929, a gold medal by the French Geographic Society in 1910, and the Penrose gold medal of the Geological Society of America in 1944. He was Vice-President of the American Association for Advancement of Science, 1908, and of the Association of American Geographers, 1918; President of the Seismological Society in 1921–1927, of the Geological Society of America in 1928, and of the Pacific Section of the American Association for the Advancement of Science in 1935.

He was a member of the National Academy of Sciences and of American Philosophical Society, and an honorary member of the Royal Geographical Society.

Although Dr. Willis was primarily a geologist, he did much to make the world better known; he also contributed at least one article each to the *Bulletin of the American Geographical Society, The Annals of the Association of American Geographers,* and the *Geographical Review.* The *Review* carried reviews of most of his books. He was the son of the distinguished American author Nathaniel P. Willis; of his own four children, one is a geologist.

PHILIP SIDNEY SMITH, 1877–1949

MEREDITH F. BURRILL

PHILIP SIDNEY SMITH, a pioneer in Alaskan geologic work and ,from 1945 to 1948 a Councillor of the Association of American Geographers, died in St. Albans, Vermont on May 10, 1949 and was buried in the family lot at Wolfeboro, New Hampshire. He was born in Medford, Massachusetts on July 28, 1877, and educated at Harvard. As an undergraduate there he was stimulated by work under Professor Shaler to choose geology for his profession. He stayed at Harvard after receiving his bachelor's degree, teaching while completing his doctorate and for two years afterward.

In 1906 he joined the staff of the Geological Survey to work in its Alaskan Division with Alfred H. Brooks. There followed nine years of arduous but rewarding field work in the Territory, principally in the area between Kotzebue Sound and Bristol Bay, upon which he published extensively. He rose rapidly in the Geological Survey from Geologic Aid to Administrative Geologist in 1915, and served for ten years in that capacity. Toward the end of this period he was Acting Director in the extended absence of George Otis Smith, and then undertook the exploration and mapping of the Naval Petroleum Reserve No. 4.

Upon the death of Alfred H. Brooks, Dr. Smith was appointed Chief Alaskan Geologist and directed the Alaskan Branch of the Survey until his retirement on March 31, 1946. Because of his wide knowledge of the Territory he was frequently called upon for advice and assistance on Alaskan problems. In 1933 and 1934 he went to Alaska to supervise the program of the Public Works Administration, and in 1944 his services were lent to the Corps of Engineers for permafrost studies.

One of the outstanding items in his long list of publications is Professional Paper 192, *The Areal Geology of Alaska,* published by the Geological Survey in 1939, in which he synthesized nearly 40 years of investigations in the Territory by scores of geologists. Smith and his Survey colleagues Capps, Moffit, and Mertie had by then a combined experience of more than 100 field seasons in Alaska. The great quantity of accumulated knowledge was skillfully sorted and the broad generalizations drawn as far as the data would permit. The introduction to this work is revealing of the character of the man; to read it is to respect him. Writing and active participation in the affairs of the Arctic Institute of North America, of which he was a Governor and to which he donated his geologic library, continued unabated until his death of pneumonia after a short illness.

Although specializing in the geology of Alaska, the breadth of his interests and contacts is attested by his membership and active participation in no fewer than 14 scientific societies and clubs, the majority of them outside the field of geology as such. He was a man of great physical and mental vigor whose influence will long be felt both through his published contributions to knowledge and through the work of his colleagues, to whom he gave freely of himself. He earned preeminence in his field and enjoyed both the respect and affection of his fellows.

Photo by Mercer Studio

W. ELMER EKBLAW, 1882–1949

W. ELMER EKBLAW, 1882–1949

CARLETON P. BARNES

DR. W. ELMER EKBLAW, geographer, explorer, author, teacher, inspiring interpreter of nature, and civic leader, died at his home in Grafton, Massachusetts, on June 5, 1949.

The energy and enthusiasm in which he led students to an appreciation of the living world, and which he carried to all his manifold activities, was a source of inspiration to those who were fortunate enough to be associated with him. Professor of Geography at Clark University since 1928, and editor of *Economic Geography,* he contributed much to the widespread appreciation of the cultural value of his chosen discipline. His unusual combination of training in botany, geology, ornithology, and geography made him an exceptionally valuable observer and interpreter of the natural environment.

In 1913, he was chosen botanist and geologist for the MacMillan Crocker Land Expedition to the Arctic. Unable to return in one year as planned, the expedition was forced to remain in northern Greenland for more than four years. Dr. Ekblaw spent these years in scientific observation and recording of the geology, plants, animals, and people of this northern-most inhabited place of the globe. His reports on the different phases of his research to the American Musem of Natural History, greatly added to our knowledge of the polar environment, and of the culture and sociology of the interesting human group that occupies it.

In 1942, King Gustaf of Sweden conferred on him the title of Knight of the Order of the North Star, in appreciation of his service in promoting cultural relationships with Scandinavian countries.

A native of Illinois, Dr. Eklaw came to be a lover and interpreter of the New England landscape where he spent his later years. His observations of the natural New England scene were widely read in the *Worcester Telegram* over a period of many years and contributed very much toward public appreciation of the natural landscape and concern for its conservation.

In addition to his educational and scientific work, he found time to participate actively in community affairs. He served as a vice-president and trustee of the Massachusetts Farm Bureau, as secretary and as trustee of the Worcester Natural History Museum, and as trustee of Fairlawn Hospital in Worcester.

He was vice president of the Association of American Geographers in 1941.

During the war he was consultant to the War Department on geographic problems affecting military operations.

To thousands, Dr. Ekblaw's passing has meant the loss of a fine friend; to his profession, the loss of a valued member, and to his community, the loss of a much-needed public-serving citizen.

WALLACE W. ATWOOD, 1872–1949

GEORGE B. CRESSEY

NO AMERICAN has ever brought geography to so many people as President Wallace W. Atwood. Fifty million children have learned their picture of our Earth from his textbooks, thousands of students have sat in his classrooms, and nearly a hundred have received their doctorate under his direction. To those who knew him, however, he was first a gentleman then a geographer. If he did not write poetry, he lived it. His was a genuine interest in people and in nature, hence came a personality which radiated kindliness and sympathetic understanding.

President Atwood had an extraordinary capacity for work. As an author he wrote no less than thirty volumes, as a traveller he visited every continent, as an administrator he gave Clark University twenty six years of leadership which enhanced its scholarly standing and nearly quadrupled its faculty. Forty four years of teaching witness to his sincere interest in students. All who sat in his classroom or listened to his lectures recognize that he was a great teacher; few have been so successful in clear and inspired presentation. His ability in blackboard illustration was remarkable. He made the Earth real because he knew and loved it, but his teaching ability came first of all because he liked people both young and old.

Wallace Walter Atwood was born in Chicago on October 1, 1872, the son of Thomas Green and Adelaide Adelia (Richards) Atwood. His geologic and geographic interests date from a visit to Devils Lake, Wisconsin with Professor Rollin D. Salisbury during his sophomore year at the University of Chicago. After his graduation from the University of Chicago in 1897 he became an Assistant Geologist on the New Jersey Geological Survey, and in 1898–99 was a member of the Wisconsin Natural History Survey. In 1899 he returned to Chicago as Instructor. The University granted his doctorate in 1903, and in 1910 promoted him to an Associate Professorship. In 1901 he received an appointment as Assistant Geologist under the United States Geological Survey. In 1909 he was promoted to Geologist, a rank which he held till his death. From 1913 to 1920 he served as Professor of Physiography at Harvard University. From 1920 until 1946 he was President of Clark University and Head of its School of Geography. Following his retirement in 1946 he was made President Emeritus. Both Worcester Polytechnic Institute and Clark University conferred Honorary Degrees on him. President Atwood died at his summer home in Annisquam, Mass. on July 24, 1949. He married Harriet Fowle Bradley on September 22, 1900, and is survived by his wife and four children, Rollin Salisbury Atwood, Wallace W. Atwood Jr., Mrs. Harriet Olmsted, and Mrs. Mary Hedge.

World wide interests brought world wide contacts. Among responsibilities and honors were the Presidency of the National Parks Association from 1929 to 1933, and the Pan American Congress of Geography and History from 1932 to 1935.

Photo by Pach Bros.

WALLACE W. ATWOOD, 1872–1949

President Atwood attended the Pacific Science Congress in 1926 and 1948, and the International Geographical Congress in 1927 and 1929. From his alma mater, Chicago, he received a medal in 1941, and the Geographical Society of Chicago presented him a gold medal in 1948 for "distinguished services in the field of geomorphology." He served as President of the Association of American Geographers in

1934, and in 1944 received the Distinguished Service Award of the National Council of Geography Teachers. Membership in the Association of American Geographers, the Geological Society of America, and some three dozen scholarly and civic organizations attest to the breadth of his interests.

Few authors in any field have written more prolifically or had such a wide audience. Thirty thousand schools have used his elementary textbooks, and the sales have run into the millions. This ability to write lucidly and with meaning is found equally in his professional papers on geology and geomorphology. Perhaps the best insight into what he enjoyed most is found in his volume *The Rocky Mountains;* the writer would imagine that its preparation may have given Dr. Atwood his greatest writing pleasure. During the year previous to his death, Dr. Atwood travelled more than 13,000 miles through the Rockies on his twenty-fifth field trip in this area in preparation for a final report on its geomorphic history. Few men knew the mountains better, and here was President Atwood's first regional love and his greatest scientific contribution.

The Clark School of Geography stands as his most conspicuous achievement. This was established in 1920 when he became President of the University. In this he brought distinction to Clark, and made its name the most widely known center of geographic study in the world. In 1925 he founded the magazine *Economic Geography*.

To President Atwood, geography was of vital importance in understanding world problems, and he was continually concerned that his listeners and readers appreciate the human quality of other peoples. This involved a keen interest in problems of human welfare, both here and abroad. Geography to him was a means to better human understanding. His interests led him to active participation in conservation, the national parks, and forestry.

With all of his awards, decorations, and degrees, President Atwood remained unassuming and friendly. His students will remember his outstanding kindliness, his modest dignity, and his sterling character. He worked with his students and associates, not over them. Geography has lost one of its leading citizens.

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MARK JEFFERSON, 1863–1949

S. S. VISHER

PROFESSOR MARK JEFFERSON, charter member of the Association of American Geographers, vice president in 1910, and president in 1916, died August 8, 1949 in his 87th year.

Professor Jefferson, for almost forty years in charge of geography at the State Normal College at Ypsilanti, Michigan, made a notable contribution to the development of geography in the United States. His influence was exerted partly through many worthy articles, notes, and reviews and several exceptionally stimulating articles, and partly through his success as a teacher. During his earlier years at Ypsilanti he started on their geographic careers three men who later became presidents of the Association of American Geographers and two others who have risen high in the Association.[1] Three have received the Distinguished Service to Geography Award of the National Council of Geography Teachers. This disciple record is better than that of any other college. Indeed, few major universities with departments of geography and with large numbers of students, fine equipment, and graduate school opportunities have approached that record, of starting in geography as many men who subsequently rose high in the profession.

Professor Jefferson's life may be divided into five periods. Until he was twenty, he lived in a suburb of Boston. He entered Boston University at the age of 17, and studied chiefly languages (at twenty he could read six) and astronomy. Early in his senior year he was invited to become an assistant astronomer at the National Astronomical Observatory, Cordoba, Argentina. His acceptance marked the beginning of the second period of his life, 1883–1889.

Jefferson spent nearly six years in South America. This period was highly significant in his development. He enjoyed and appreciated the South Americans, and acquired knowledge of their life which helped to prepare him for later geographic work. His Argentine experiences included three years as a submanager of a sugar estate. Between sugar harvests, he returned once to Boston and completed, in two months and partly by examinations, the work for the A.B. degree. The degree was conferred by Boston University in 1889. Jefferson's travels during this period took him to Chile and Brazil, to Europe, and to North Africa.

The third period was 1890–1901. This time was spent largely in high school teaching in Massachusetts. However, two years and two summers, 1892 and 1896, were devoted to study at Harvard University. From that institution, Jefferson received the A.B. degree in 1897 and the M.A. in 1898. Jefferson first became acquainted with William Morris Davis in 1892. Davis effectively stimulated him to become a geographer, and aided him otherwise. (Davis had held, a dozen years

[1] Isaiah Bowman, Charles C. Colby, A. E. Parkins, D. H. Davis, R. R. Platt; George J. Miller had his first course in geography as a student of Jefferson's at the University of Michigan in the summer of 1903.

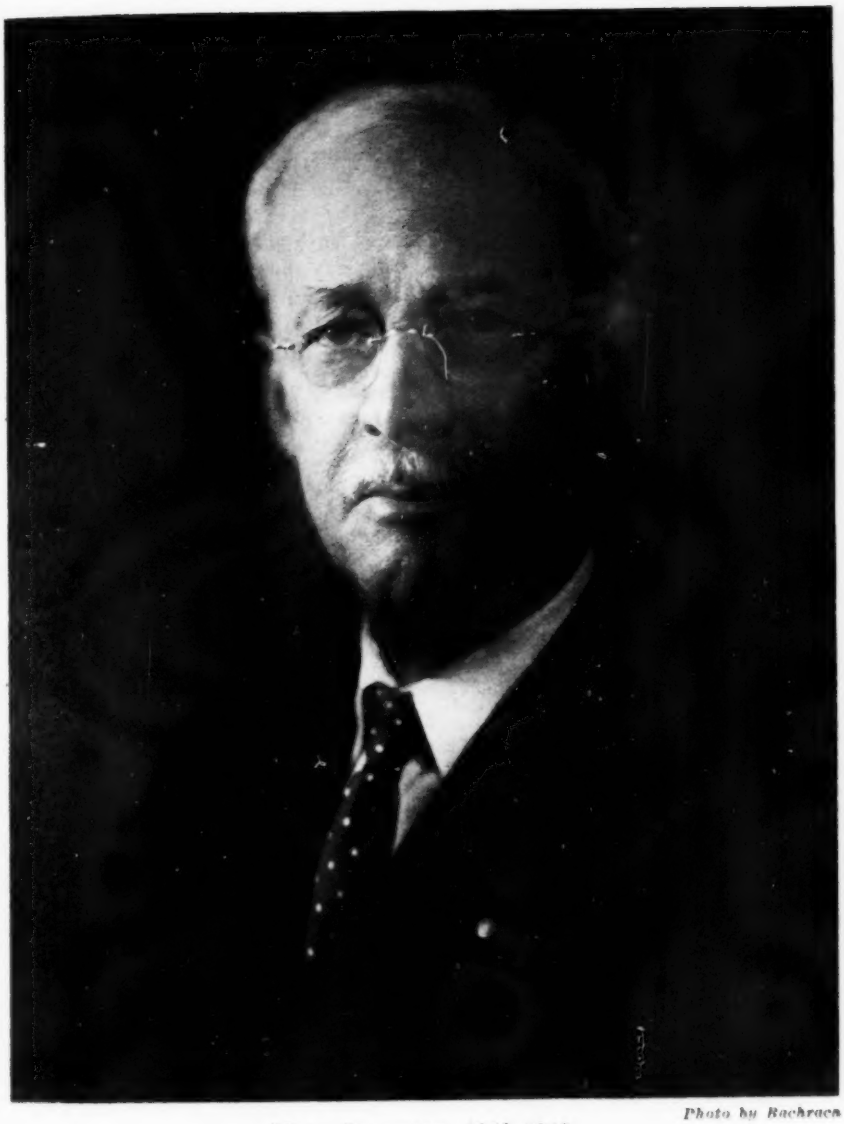
earlier, the same astronomical position in Argentine that Jefferson had. This helped to draw them together.) Jefferson taught two summers, 1898 and 1900, at Harvard.

The fourth period of Jefferson's life was 1901–1939, during which time he was in charge of geography at Ypsilanti. Although he had published three articles on tides and two geological articles shortly before 1901, most of Jefferson's publications came in this fourth period which started when he was 38 years of age. His early scientific interests were largely physiographic. In the first edition of *American Men of Science* he gave them as "tides, river meanders, and beach cusps." He was elected a Fellow of the Geological Society of America in 1904, and maintained his membership to the end of his life. His interests broadened progressively. He became an associate editor of the *Journal of Geography* in 1902. To it he contributed numerous articles and several reviews. He became contributing editor of the *Bulletin of the American Geographical Society* in 1909. The *Bulletin* and its successor, the *Geographical Review*, published numerous articles, notes, and reviews and three longer studies. Late in this period, Professor Jefferson (in *American Men of Science*) gave his chief interests as "distribution of man; distribution of climates, population growth, geography of cities."

Professor Jefferson carried on field studies in Europe in 1904, 1911, and 1935, and in South America in 1918 and 1926. He accompanied W. M. Davis to Europe in 1911, where much was seen under the guidance of 30 local European geographers. In 1912, Jefferson was marshall for the American Geographical Society's international tour of the United States, in which 45 European geographers participated. From November 1918 to June 1919, he was cartographer to the World War I Peace Commission in Paris. He taught during summer terms at Michigan in 1903, Yale in 1907, Chicago in 1917, California in 1920, and Columbia in 1934. During the period from 1901 to 1939, he contributed 20 articles, 31 notes, 31 reviews, and three special studies to the *Geographical Review* or its predecessor. His South American studies resulted partly from an expedition to Brazil, Argentina, and Chile in 1918, financed by the American Geographical Society.

The fifth period, 1939–1949, was that of his retirement, which commenced when he was 76. During this last period, his activity was appreciable. At 85, he reported walking at least a mile a day, and having so much to do that frequently he did not have time for an afternoon nap.

Professor Jefferson was exceptionally enthusiastic, energetic, and original. Many of his articles were distinguished; his studies of the distribution of civilization, of railways, and of cities have been widely cited. His achievements led to several high honors, including the Cullum Gold Medal of the American Geographical Society (1931), the Culver Gold Medal of the Chicago Geographical Society (1932), and the Distinguished Service Award of the National Council of Geography Teachers (1939). Locally, he had been president of the Michigan Academy of Science, Arts and Letters, and he was highly influential in Kiwanis.



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MARK JEFFERSON, 1863–1949

In addition to his contribution to geography and education, Professor Jefferson reared three sons and four daughters.

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Notes and reviews.

Notes to a total of 31 appeared in the volumes from 1917 through 1938. Each was less than a page long, but many represented considerable work and were appreciable contributions. They dealt largely with South America, Europe, population, and climate.

Thirty reviews of books appeared in these same volumes; nine were reviews of German books and three, of Spanish. Several dealt with South America.

(Precise citations to both the notes and the reviews may be found in the three index volumes of the *Review*).

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REVIEWS AND ABSTRACTS OF STUDIES

ECONOMIC GEOGRAPHY OF THE USSR

S. S.Balzak, V. F. Vasyutin, Ya. G. Feigin: *Economic Geography of the USSR*, xlv + 620 pp., maps, bibliographies, index, translated from the Russian under the editorship of Chauncy D. Harris. New York: Macmillan, 1949.

When I once asked a geographer in Moscow to define the Soviet concept of geography he replied, "The function of geography is to develop the productive resources of the state." After one has read the above volume, it might be added that geography also exists to serve Marxian ideology.

This book is an extremely valuable contribution to our understanding of the Soviet Union. In no other volume is there more than a fraction of the encyclopedic detail on geography here presented, nor is there elsewhere available a similar picture of geographic thinking in the Soviet Union. *Economic Geography of the USSR* was published in Moscow in 1940, and is here translated by Robert M. Hankin and Olga Adler Titelbaum under the auspices of the American Council of Learned Societies, with the editorship of Chauncy D. Harris. While the factual information is prewar, and largely 1935, the translation contains many up-to-date additions to text and tables.

In addition to the three editors listed, the name of M. I. Pomus is given as Map Editor, and seven authors are credited with various chapters. Of the entire group of contributors, four appear to be economists while only one is identified as a geographer. This is the first of two volumes, the second being devoted to republics and regions.

The comprehensive scope of the volume is indicated by the fact that it includes three Tables of Contents, two Forewords, a Preface, an Editorial Note, an Introduction to Soviet Economic Geography, six Appendices, and seven Indexes. Several of these are new to the American edition. An outstanding feature of the volume are the 53 tables and 83 maps, 14 and 19 of them respectively prepared by the American editor. Six of the maps are folded inserts. Nowhere else in any source outside the Great Soviet World Atlas is there such a wealth of cartographic detail. These maps cover a wide range of geography, from natural zones and climatic conditions to population, industrial production, crops, and transport.

Five hundred pages are devoted to the seven chapters. Four of these are encyclopedic descriptions of natural conditions and natural resources, industry, agriculture, and transport. These provide a bewildering array of factual data, some of it given in exasperating percentages of increase, but with a considerable number of production figures. There is a plethora of place names, seldom less than two dozen on a page. Thus the Index of Place Names, prepared by William Horbaly, lists some 2,880 names. The chapters follow customary lines, and are intelligible to any geographer. Between them are three ideological chapters on the distribution of productive forces under Tsarist and Soviet conditions, and on the distribution of population. These discourses present comparisons of capitalism and socialism as they relate to the land, and provide an illuminating insight into the purported intrigue of saboteurs "struggling against the introduction of local fuel" and deviationists "foaming at the mouth."

Each country is entitled to have its geography seen through sympathetic eyes. We now have three wartime or postwar geographies of the Soviet Union in English, and as many in French. The three volumes of Mikhailov provide a general picture from the Soviet viewpoint, but Balzak and his associates have written the first detailed treatise. In fact this is the first college level book on Soviet geography to have appeared in that country since the Revolution. With important reservations, this becomes the definitive volume on the geography of the USSR. It is unfortunate that its use will be restricted by its price of ten dollars.

American readers will be especially interested in the introduction by Feigin, with its "Soviet View of the Science of Economic Geography." The opening sentence reads "Economic geography is the science of the areal distribution of production and of the conditions of its development in different countries and regions." This is followed by a quotation from Stalin, and by comparisons of production under capitalism (anarchy, competition, . . . imperialism) and socialism (uniform distribution of production). After a criticism of Hettner and Huntington for their supposed geographic determinism, there follows this sentence: "The

geographic enivronment," writes Comrade Stalin, "is incontrovertibly one of the unchanging and indispensable conditions of the development of society and, of course, it influences the development of a society—it either accelerates or retards the course of development of that society. But its influence is not *the determining* influence, since society changes and develops incomparably faster than does the geographic environment."

Where the volume concerns itself with economic geography, the content is excellent; where it becomes a statement of Soviet ideas the value is quite different, but none the less interesting. All geographers should be concerned with the latter, all students of the USSR will value the former.

George B. Cressey
Syracuse University

ECONOMIC GEOGRAPHY OF GREAT BRITAIN

Wilfred Smith. *An Economic Geography of Great Britain* xv+747 pp., maps, graphs. London: Methuen and Co., Ltd., 1948.

This rewarding work by Wilfred Smith is an outstanding example of a book which states its conceptual framework clearly in the early paragraphs and which follows its objective through great masses of supporting evidence. In his introduction, Mr. Smith states "the view taken in this book is that economic geography is one facet of the whole geographical complex, its main field being the analysis of the distribution forms or patterns of economic life" and that "economic geography is not static. though it has its relatively static elements, but dynamic."

Throughout the entire 696 pages of text, the author maintains this philosophy, first by presenting the distribution patterns and carefully analyzing them in genetic terms, and secondly, by continually emphasizing the ebb and flow of these patterns in response to natural or cultural stimuli. Discussions of individual industries, either agriculture, mining, or manufacturing are marked by distributional emphasis. Techniques and processes are described only in enough detail to show their influence on location, and thus become a carefully considered part of the analysis of distribution. Such analysis is of necessity packed with facts, but the facts are not encyclopedic; rather they give evidence of careful selection, and are included only as they contribute to the explanation of distributions. In this manner, *An Economic Geography of Great Britain* avoids cataloging in favor of analysis.

By achieving a completely integrated presentation, in which the chapters dealing with specific classes of industry become in reality exhaustive case studies in industrial location, the author has prepared a book which is useful not only as an evaluation of the British economy, but also illustrates, in a dynamic sense, the complexity of facts which result in location of industry in an area such as Great Britain. Many of the locational studies apply equally well to an understanding of the localization of industry in the United States and elsewhere. Pertinent changes in the natural landscape are considered and used to explain distributions and changes in pattern of both primary and secondary production. The changing techniques of industrial processes are also shown to play their role in the fluid patterns of the British economy. Long-range fluctuations in Britain's position in the world's commercial and political structure are frankly discussed as they pertain to the structure and distribution of Britain's productive plant.

Mr. Smith opens his account with a well digested discussion of the antecedents of the present economic geography of Great Britain. The wealth of background in this section is of particular value to American readers, who should welcome this discussion of the distributional history of argriculture, industry, and trade and transport. The remainder of the book consists of chapters discussing the major industries of Great Britain; two chapters have to do with agriculture, one with coal mining, seven with manufacturing, one with inland and ocean transportation, and a final chapter is concerned with foreign trade. Significantly, perhaps, of the seven chapters on manufacturing industries, three deal with textiles or the manufacture of clothing and two others with iron and steel and the products of iron and steel. Leather and its products, and milling and baking are the other industries concerned. In this manner, the author has maintained space balance in his book. The coverage is broader than the table of contents indicates because under "Engineering" the author describes a wide variety of industries consisting "primarily and essentially of the making of engines and machines and of the construction of vehicles driven by engines."

The book is carefully documented and gives evidence of exhaustive research and consideration. The bibliography alone, as cited in the footnotes, is a real contribution to American geographers, economists, and historians interested in the British economy.

The maps which are offered in the text have the advantage of simplicity and clarity. Each has its specific problem and confines itself to presenting a single set of data. Only a few scales are used, making it possible to compare distributions readily from map to map. There are no photographs, but the work does not suffer from this omission.

It is regretable that the author did not find it generally possible to bring his discussion of the British economy into the post-war period. Wherever he has done so, it has enriched his presentation. It is however, understandable that Mr. Smith uses the "eve of the late war" as his terminal date.

The author concludes that the present status of most British industries can be improved only by increasing efficiency. Both the volume of export trade and the ability to pay for imports of foods and raw materials requires a reversal of long-trends in the British economy. It is pointed out that the technical superiority enjoyed by Britain during the nineteenth century is decreasing and is not offset by low wages. "A high standard of living and high wages are an industrial disability only if efficiency be low, but it is clear that British industry can compete in world markets only if efficiency of plant, of management, and of labour be of a high order. This is by no means true of all industries and great efforts are necessary to improve competitive efficiency." Some appraisal of the type and effectiveness of these efforts would be welcome.

Joseph A. Russell
University of Illinois

CARTOGRAPHY

Lloyd A. Brown, *The Story of Maps*, Boston: Little, Brown and Co., 1949.

The literature of maps and map making has developed in a threefold manner: technical publications devoted to the details of surveying and map compilation, construction, and interpretation; particular studies in the history of specific maps, map makers, and mapped areas; and general essays in the history and appreciation of maps. This latter subject is thoroughly intertwined with the development of geographic thought and knowledge. *The Story of Maps* is based appropriately upon the first two categories, but is itself in the third. Mr. Brown sets forth a narrative history in which cartography is the central theme, illuminated by the personalities, concepts, and events of some six thousand years. His principal contribution is not that he has brought to light new information or put forth new interpretations, but that he has presented the array of carto-geographic thought and achievement more comprehensively and with better integration than it has been stated before. In addition, he has written well and attractively. *The Story of Maps* is no mere "popularization," but the work of a scholarly mind with excellent qualities of judgment and emphasis. The book justly deserves "popularity," however, because of its evident appeal to a wide circle of readers. The excellent format and the attractive sketches, portraits, and maps are further assets.

The devices employed to carry forward the story of maps are well chosen and cleverly used. The first two chapters are an appraisal of classical knowledge and opinion concerning astronomy, geography, surveying, and maps seen through the eyes of Strabo, whose "*Geography* is the principal key to ancient cartography because the manuscript survived and was published," but with a running commentary from the modern vantage point. In chapter three Claudius Ptolemy, to whom geography and cartography were synonymous, assembles the body of fact, part-truth, and fiction which was the legacy of the ancient world to the sea-farers and explorers of the Rennaissance. The medieval period and its confusion of apathy and intolerance toward science is admirably handled in chapter four. Here, at last, Prince Henry the Navigator opens the way to the reassessment of all geographical and cartographical lore. Next, Mr. Brown takes his readers to sea, first casting back to the Phoenician mariners and then moving forward into the age of exploration via periplus, wind rose, magnetic compass portolan, Mercator, "waggoner," and hydrographer, to the commercial chart publishers. Two hundred and fifty years of the "map and chart trade" beginning with Gutenberg's invention of printing is the subject of chapter six, and may well be the most fascinating part of the book for many readers. The author then turns

to the problem of the dimensions of the earth and the determination of positions on its surface in a chapter on latitude and another on longitude. Chapter nine reveals the development of surveying and of topographic mapping on a national basis, and the final chapter takes the large-scale mapping of the whole earth as its subject. Mr. Brown concludes by emphasizing his original contention that after all of these centuries the world is still inadequately mapped to serve mankind.

In support of 309 pages of text, *The Story of Maps* contains 30 pages of notes giving citations and additional information, 32 pages of bibliographical references arranged under subject headings, 22 pages of index stressing place names and personal names, some 80 illustrations, and end papers. Of themselves, these materials are a significant contribution to the geographer.

No doubt most professional geographers and students of geography will welcome *The Story of Maps* as a valuable addition to their bookshelves. It furnishes pleasant reading and much substance on the development of geographic thought and knowledge through the medium of maps. There are a number of curious omissions which may, of course, have been deliberately intended. The European focus has resulted in scanty treatment of the indigenous mapping of China, Japan, Korea, and other Far Eastern areas, including the interesting aspect of European influences upon that cartography. The Arab world is slighted although it does not go unmentioned. The journal devoted solely to early cartography, *Imago Mundi*, is ignored despite the fact that its editor, Leo Bagrow, is cited for articles published elsewhere. Lewis' biography of Matthew Fontaine Maury is included in the bibliography, but this "Pathfinder of the Seas" does not appear in the narrative. A more serious objection is that the book fails to indicate either the broadening or the intensification of the field of cartography in the 19th and 20th centuries. Map subjects, such as climatology, geology, resources, land utilization, population, economics, and indeed the whole realm of distributional mapping, are not acknowledged. Present techniques of showing distributions, modern efforts of depicting relief, and new grids and projections are ignored. The contemporary cartographer is not introduced to the reader. The map-librarian and map user will look in vain for guidance in map classification and care, a subject in which Mr. Brown of Peabody Institute Library is an authority.

The reviewer believes that these and other criticisms of omissions that can be made of *The Story of Maps* are insignificant in comparison to the triumph of commission which Mr. Brown has achieved. He rightly claims that "there is no other such chronicle in print" and geographers in particular are indebted to him.

HIBBERD V. B. KLINE, JR.
Syracuse University

A STUDY OF A BELGIAN REGION

F. J. Monkhouse, *The Belgian Kempenland*, xiv + 252 pp., maps, bibliography, index. Liverpool: University Press, 1949.

The Kempen (or Campine) is that portion of Belgium lying east of Antwerp and north of the line of the rivers Rupel, Dyle, and Demer. It is a part of the westernmost of the heath-lands of the North European Plain. Until after the beginning of this century, the Kempen was among the poorer and more thinly peopled parts of Belgium. Agriculture provided a meager and hard-won living. Attempts to improve the lot of the inhabitants, from the twelfth century on, resulted in only slight expansion of cultivated land about each of the small, widely scattered villages.

During the early part of the nineteenth century, geological opinion postulated the existence of coal beneath the Kempen. Toward the end of the century, actual exploration by means of borings was undertaken. Not until 1901, however, was a coal seam discovered. This was in a boring in the southeastern part of the region and at a depth of about 1600 feet beneath the surface. Since that discovery, further indications from borings have made it possible to delimit a coal basin from 45 to 50 miles long from east to west and between 8 and 12 miles wide.

The first concessions in the field were granted by the Belgian government in 1906, but high costs of development, including lack of labor and lack of transportation facilities, conspired to delay coal production until 1917. Only one colliery was in operation as late as 1921. Of all Belgian coal, the Kempen field produced under one per cent in 1919; it produced nearly 32 per cent in 1946. As the

older Belgian fields become more difficult and more costly to work, the Kempen field assumes greater significance in the total national production story.

Manufacturing has grown along with coal mining so that the region now has an industrial rather than an agricultural air. The Kempen is no longer a bleak and unproductive land. It has emerged as a vital region in Belgium's total economy.

The Belgian Kempenland is, as its author states in his preface, a "systematic" treatment; "the physical setting is described first, then the features of the economic life, and finally the distribution of population and settlement." Yet, the work is not simply a catalogue of facts. Careful selection by the author leads the reader to an appreciation of the Kempen as a distinctive unit in the Belgian land. The region is pictured not as a creation of academic convenience, but rather as what may properly be called a *pays*.

By way of illustration, there are seventy one maps and diagrams, numerous tables, and one photograph. The maps and diagrams are unusual for their clarity, but, from this reviewer's point of view at least, the maps exhibit two faults. The maps indicate neither direction nor exact location. It is tacitly assumed that directions are indicated by the convention of placing north at the top of the map; the shapes of political boundaries are relied upon to indicate location. It is to be regretted also that more photographs were not, perhaps could not be, included.

So far as the text is concerned, it is only in the section entitled "Geology and Structure" that the author introduces extraneous material. Reference in that section to geological periods accomplishes no clear purpose, nor is the reference significant in later discussion through the work.

An excellent "Bibliographical Note" is included at the end of this thorough study. Despite the weaknesses noted above, *The Belgian Kempenland* is a real and a fine contribution to regional geographical literature.

HENRY MADISON KENDALL
Syracuse University